



Service Manual

# Service Manual

## KC910



Model : KC910



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# 1. INTRODUCTION

## 1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

## 1.2 Regulatory Information

### A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system.

There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of commoncarrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that result from such unauthorized use.

### B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

### C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the phones or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

### D. Maintenance Limitations

Maintenance limitations on the phones must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs except as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.



# 1. INTRODUCTION

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## E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

## F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

## G. Interference and Attenuation

A phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

## H. Electrostatic Sensitive Devices

### ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the  sign. Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with antistatic mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

## 2. PERFORMANCE

### 2.1 System Overview

Item	Specification
Shape	GSM900/1800/1900 and WCDMA Band1,8 Communicator Handset
Size	107.8 X 55.9 X 13.95 mm
Weight	110 g
Power	3.7V normal, 1000 mAh Li-Ion
Talk Time with 1000mAh)	Over 170 min (WCDMA, Tx=10 dBm, Voice) Over 200 min (GSM, Max Tx-29dBm, Voice)
Standby Time (with 1000mAh)	Over 250 Hrs (WCDMA, DRX=1.28) Over 250 Hrs (GSM, Paging period=5)
Antenna	Internal type and Antenna
LCD	TFT Main LCD(3', 240 x 400)
LCD Backlight	White LED Back Light
Camera	8.0 Mega pixel + VGA Video Call Camera
Vibrator	Yes (Coin Type)
LED Indicator	No
MIC	Yes
Receiver	Yes
Earphone Jack	Yes
Connectivity	Bluetooth, FM radio, Wi-Fi, GPS, USB
Volume Key	Push Type (+, -)
External Memory	Micro-SD
I/O Connect	18 Pin

## 2. PERFORMANCE

### 2.2 Usable environment

#### 1) Environment

Item	Specification
Voltage	3.7 V(Typ), 3.2 V(Min), [Shut Down : 3.2 V]
Operation Temp	-20 ~ +60°C
Storage Temp	-30 ~ +80°C
Humidity	85 % (Max)

#### 2) Environment (Accessory)

Reference	Spec.	Min	Typ.	Max	Unit
TA Power	Available power	100	220	240	Vac

\* CLA : 12 ~ 24 V(DC)

### 2.3 Radio Performance

#### 1) Transmitter - GSM Mode

No	Item		GSM		DCS & PCS	
1	Conducted  Spurious  Emission	MS allocated  Channel	100k~1GHz	-39dBm	9k ~ 1GHz	-39dBm
					1G~[A]MHz	-33dBm
			1G~12.75GHz	-33dBm	[A]M~[B]MHz	-39dBm
					[B]M~12.75GHz	-33dBm
		Idle Mode	100k~880MHz	-60dBm	100k~880MHz	-60dBm
			880M~915MHz	-62dBm	880M~915MHz	-62dBm
			915M~1GHz	-60dBm	915M~1GHz	-60dBm
			1G~[A]MHz	-50dBm	1G~[A]MHz	-50dBm
			[A]M~[B]MHz	-56dBm	[A]M~[B]MHz	-56dBm
			[B]M~12.5GHz	-50dBm	[B]M~12.5GHz	-50dBm

\* In case of DCS : [A] -> 1710, [B] -> 1785

\* In case of PCS : [A] -> 1850, [B] -> 1910

## 2. PERFORMANCE

No	Item		GSM		DCS & PCS	
2	Radiated Spurious Emission	MS allocated  Channel	30M ~ 1GHz	-36dBm	30M~1GHz	-36dBm
					1G~[A]MHz	-30dBm
			1G ~ 4GHz	-30dBm	[A]M~[B]MHz	-36dBm
					[B]M~4GHz	-30dBm
		Idle Mode	30M ~ 880MHz	-57dBm	30M~880MHz	-57dBm
			880M ~ 915MHz	-59dBm	880M~915MHz	-59dBm
			915M~1GHz	-57dBm	915M~1GHz	-57dBm
			1G~[A]MHz	-47dBm	1G~[A]MHz	-47dBm
[A]M~[B]MHz	-53dBm		[A]M~[B]MHz	-53dBm		
[B]M~4GHz	-47dBm		[B]M~4GHz	-47dBm		
3	Frequency Error		±0.1ppm		±0.1ppm	
4	Phase Error		±5(RMS)		±5(RMS)	
			±20(PEAK)		±20(PEAK)	
5	Frequency Error  Under Multipath and Interference Condition		3dB below reference sensitivity		3dB below reference sensitivity	
			RA250 : ±200Hz		RA250: ±250Hz	
			HT100 : ±100Hz		HT100: ±250Hz	
			TU50 : ±100Hz		TU50: ±150Hz	
			TU3 : ±150Hz		TU1.5: ±200Hz	
6	Output RF Spectrum	Due to  modulation	0 ~ 100kHz	+0.5dB	0 ~ 100kHz	+0.5dB
			200kHz	-30dB	200kHz	-30dB
			250kHz	-33dB	250kHz	-33dB
			400kHz	-60dB	400kHz	-60dB
			600 ~ 1800kHz	-66dB	600 ~ 1800kHz	-60dB
			1800 ~ 3000kHz	-69dB	1800 ~ 6000kHz	-65dB
			3000 ~ 6000kHz	-71dB	≥6000kHz	-73dB
			≥6000kHz	-77dB		
		Due to  Switching transient	400kHz	-19dB	400kHz	-22dB
			600kHz	-21dB	600kHz	-24dB
			1200kHz	-21dB	1200kHz	-24dB
			1800kHz	-24dB	1800kHz	-27dB

\*\* In case of DCS : [A] -> 1710, [B] -> 1785

\* In case of PCS : [A] -> 1850, [B] -> 1910

## 2. PERFORMANCE

No	Item	GSM			DCS & PCS		
7	Intermodulation attenuation		—		Frequency offset	800kHz	
					Intermodulation product should be Less than 55dB below the level of Wanted signal		
8	Transmitter Output Power	Power control	Power	Tolerance	Power control	Power	Tolerance
		Level	(dBm)	(dB)	Level	(dBm)	(dB)
		5	33	±3	0	30	±3
		6	31	±3	1	28	±3
		7	29	±3	2	26	±3
		8	27	±3	3	24	±3
		9	25	±3	4	22	±3
		10	23	±3	5	20	±3
		11	21	±3	6	18	±3
		12	19	±3	7	16	±3
		13	17	±3	8	14	±3
		14	15	±3	9	12	±4
		15	13	±3	10	10	±4
		16	11	±5	11	8	±4
		17	9	±5	12	6	±4
		18	7	±5	13	4	±4
		19	5	±5	14	2	±5
					15	0	±5
9	Burst timing	Mask IN			Mask IN		

## 2. PERFORMANCE

### 2) Transmitter - WCDMA Mode

No	Item	Specification
1	Transmit Frequency	Band1 : 1920 ~1980 MHz Band8 : 880~ 915 MHz
2	Maximum Output Power	Class 3 : +24dBm(+1/-3dB) Class 4 : +21dBm(°æ2dB)
3	Frequency Error	±0.1ppm
4	Open Loop Power Control in Uplink	±9dB@normal, ±12dB@extreme
5	Inner Loop Power Control in Uplink	Adjust output(TPC command)
		cmd      1dB      2dB      3dB
		+1      +0.5/1.5      +1/3      +1.5/4.5
		0      -0.5/+0.5      -0.5/+0.5      -0.5/+0.5
		-1      -0.5/-1.5      -1/-3      -1.5/-4.5
		Group(10 equal command group)
		+1      +8/+12      +16/+24
6	Minimum Output Power	-50dBm(3.84MHz)
7	Out-of-synchronization handling of output power	Qin/Qout : PCCH quality levels Toff@DPCCH/lor : -22 -> -28dB Ton@DPCCH/lor : -24 -> -18dB
8	Transmit OFF Power	-56dBm(3.84MHz)
9	Transmit ON/OFF Time Mask	±25us PRACH,CPCH,uplink compressed mode
10	Change of TFC	±25us Power varies according to the data rate DTX : DPCH off (minimize interference between UE)
11	Power setting in uplink compressed	±3dB(after 14slots transmission gap)
12	Occupied Bandwidth(OBW)	5MHz(99%)
13	Spectrum emission Mask	-35-15*(Δf-2.5)dBc@ Δf=2.5~3.5MHz,30k -35-1*(Δf-3.5)dBc@ Δf=3.5~7.5MHz,1M -39-10*(Δf-7.5)dBc@ Δf=7.5~8.5MHz,1M -49dBc@ Δf=8.5~12.5MHz,1M

## 2. PERFORMANCE

No	Item	Specification
14	Adjacent Channel Leakage Ratio(ACLR)	33dB@5MHz, ACP>-50dBm 43dB@10MHz, ACP>-50dBm
15	Spurious Emissions (*: additional requirement)	-36dBm@f=9~150KHz, 1K BW -36dBm@f=50KHz~30MHz, 10K BW -36dBm@f=30MHz~1000MHz, 100K BW -30dBm@f=1~12.5GHz, 1M BW (*)-41dBm@f=1893.5~1919.6MHz, 300K (*)-67dBm@f=925~935MHz, 100K BW (*)-79dBm@f=935~960MHz, 100K BW (*)-71dBm@f=1805~1880MHz, 100K BW
16	Transmit Intermodulation	-31dBc@5MHz, Interferer -40dBc -41dBc@10MHz, Interferer -40dBc
17	Error Vector Magnitude (EVM)	17.5%(>-20dBm) (@12.2K, 1DPDCH+1DPCCH)
18	Transmit OFF Power	-15dB@SF=4.768Kbps, Multi-code transmission

### 3)Receiver - GSM Mode

No	Item		GSM	DCS & PCS
1	Sensitivity (TCH/FS Class II)		-105dBm	-105dBm
2	Co-Channel Rejection (TCH/FS Class II, RBER, TU high/FH)		C/Ic=7dB	Storage -30 ~ +85
3	Adjacent Channel Rejection	200kHz	C/Ia1=-12dB	C/Ia1=-12dB
		400kHz	C/Ia2=-44dB	C/Ia2=-44dB
4	Intermodulation Rejection		Wanted Signal :-98dBm 1st interferer:-44dBm 2nd interferer:-45dBm	Wanted Signal :-96dBm 1st interferer:-44dBm 2nd interferer:-44dBm
5	Blocking Response (TCH/FS Class II, RBER)		Wanted Signal :-101dBm Unwanted : Depend on Frequency	Wanted Signal :-101dBm Unwanted : Depend on Frequency

### 4) Receiver - WCDMA Mode

No	Item	Specification
1	Reference Sensitivity Level	-Band 1(2110~2170MHz) : -106.7 dBm(3.84 MHz) -Band 8(925~960MHz) : -103.7 dBm(3.84 MHz)
2	Maximum Input Level	-25dBm(3.84MHz) -44dBm/3.84MHz(DPCH_Ec) UE@+20dBm output power(Class3)
3	Adjacent Channel Selectivity (ACS)	33dB UE@+20dBm output power(Class3)
4	In-band Blocking	-56dBm/3.84MHz@10MHz UE@+20dBm output power(Class3)
		-44dBm/3.84MHz@15MHz UE@+20dBm output power(Class3)
5	Out-band Blocking	-44dBm/3.84MHz@f=2050~2095 and 2185~2230MHz UE@+20dBm output power(Class3)
		-30dBm/3.84MHz@f=2025~2050 and 2230~2255MHz UE@+20dBm output power(Class3)
		-15dBm/3.84MHz@f=1~2025 and 2255~12500MHz UE@+20dBm output power(Class3)
6	Spurious Response	-44dBm CW UE@+20dBm output power(Class3)
7	Intermodulation Characteristic	-46dBm CW@10MHz -46dBm/3.84MHz@20MHz UE@+20dBm output power(Class3)
8	Spurious Emissions	-57dBm@f=9KHz~1GHz, 100K BW -47dBm@f=1~12.5GHz, 1M BW -60dBm@f=1920MHz~1980MHz, 3.84M BW -60dBm@f=2110MHz~2170MHz, 3.84M BW



## 2. PERFORMANCE

### 5) Transmitter - WCDMA(HSDPA) Mode

No	Item	Specification				
1	Transmit Frequency	-Band 1 : 1920~1980MHz -Band 8 : 880~915MHz				
2	Maximum Output Power	Sub-Test 1=1/15,                      2=12/15                      21~25dBm / 3.84 MHz 3=13/15                      4=15/8                      20~25dBm / 3.84 MHz 5=15/7                      6=15/0                      19~25dBm / 3.84 MHz				
3	HS-DPCCH	Sub-test in table C.10.1.4	Power step	Start of Ack/Nack boundary	Power step size, P [dB]	Transmitter power step tolerance [dB]
		5	1	Start of Ack/Nack	6	+/- 2.3
			2	Start of CQI	1	+/- 0.6
			3	Middle of CQI	0	+/- 0.6
			4	End of CQI	5	+/- 2.3
4	Spectrum Emission Mask	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0				
		Frequency offset from carrier $\Delta f$		Minimum requirement	Measurement Bandwidth	
		2.5 ~ 3.5 MHz		-35-15( $\Delta f$ -2.5)dBc	30 kHz	
		3.5 ~ 7.5 MHz		-35-1( $\Delta f$ -3.5)dBc	1 MHz	
		7.5 ~ 8.5 MHz		-35-10( $\Delta f$ -7.5)dBc	1 MHz	
		8.5 ~ 12.5 MHz		-49dBc	1 MHz	
6	Adjacent Channel Leakage Power Ratio (ACLR)	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0  > 33 dB @ $\pm 5$ MHz > 43 dB @ $\pm 10$ MHz				
6	Error Vector Magnitude	< 17.5 %, when Pout $\geq$ -20 dBm				

### 6) Receiver - WCDMA(HSDPA) Mode

## 2. PERFORMANCE

### 6) Receiver - WCDMA(HSDPA) Mode

No	Item	Specification
1	Receiver Frequency	-Band 1 : 2110~2170MHz -Band 8 : 925~960MHz
2	Maximum Input Level (BLER or R), 16QAM Only	Sub-Test : 1=1/15, 2=12/15, 3=13/15, 4=15/8, 5=15/7, 6=15/0 BLER < 10% or R >= 700kbps

### 2.4 Current Consumption

	Stand by	Voice Call	VT
<b>WCDMA</b>	4.7 mA ↓ (DRX=1.28)	435 mA ↓ (Tx=12dBm)	683mA ↓ (Tx=12dBm)
<b>GSM</b>	3.2 mA ↓ (Paging=9period)	435 mA ↓ (Tx=Max)	

(Stand by Test Condition : Bluetooth off, LCD backlight off)

(Call Test Condition : Bluetooth off, LCD backlight off)

(VT Test Condition : Speaker off, LCD backlight On)

## 2.5 RSSI BAR

Level Change	WCDMA	GSM
7 → 5	-91 ±2dBm	-93 ±2dBm
5 → 4	-104 ±2dBm	-98 ±2dBm
4 → 2	-108 ±2dBm	-101 ±2dBm
2 → 1	-110 ±2dBm	-104 ±2dBm
1 → 0	-112 ±2dBm	-106 ±2dBm

## 2.6 Battery BAR

Indication	Standby
Bar 3	3.79 ± 0.05V ↑
Bar 3 → 2	3.78 ± 0.05V
Bar 2 → 1	3.68 ± 0.05V
Bar 1 → Empty	3.50 ± 0.05V
Low Voltage, Warning message+ Blinking	3.50 ± 0.05V [Interval : 3min(Stand-by) / 1min(Talk)]
Power Off	3.20 ± 0.05V(Stand-by) 3.20 ± 0.05V(Talk)

## 2.7 Sound Pressure Level

No	Test Item		Specification	
1	Sending Loudness Rating (SLR)	MS	8 ± 3 dB	
2	Receiving Loudness Rating (RLR)		Nor	-4 ± 3 dB
			Max	-15 ± 3 dB
3	Side Tone Masking Rating (STMR)		Min	17 dB
4	Echo Loss (EL)		Min	40 dB
5	Sending Distortion (SD)		Refer to Table 30.3	
6	Receiving Distortion (RD)		Refer to Table 30.4	
7	Idle Noise-Sending (INS)		Max	-64 dBm0p
8	Idle Noise-Receiving (INR)		Nor	Under -47 dBPA
			Max	Under -36 dBPA
9	Sending Loudness Rating (SLR)	Headset	8 ± 3 dB	
10	Receiving Loudness Rating (RLR)		Nor	-1 ± 3 dB
			Max	-12 ± 3 dB
11	Side Tone Masking Rating (STMR)		Min	25 dB
12	Echo Loss (EL)		Min	40 dB
13	Sending Distortion (SD)		Refer to Table 30.3	
14	Receiving Distortion (RD)		Refer to Table 30.4	
15	Idle Noise-Sending (INS)		Max	-55 dBm0p
16	Idle Noise-Receiving (INR)		Nor	Under -45 dBPA
			Max	Under -40 dBPA
17	TDMA Noise -. GSM : Power Level : 5 DCS/PCS : Power Level : 0 (Cell Power : -90 ~ -105 dBm)  -. Acoustic (Max Vol.) MS/Headset SLR : 8 ± 3dB MS/Headset RLR : -15 ± 3dB / -12dB (SLR/RLR : Mid-value setting)	MS and Headset	Max	-62 dBm

## 2. PERFORMANCE

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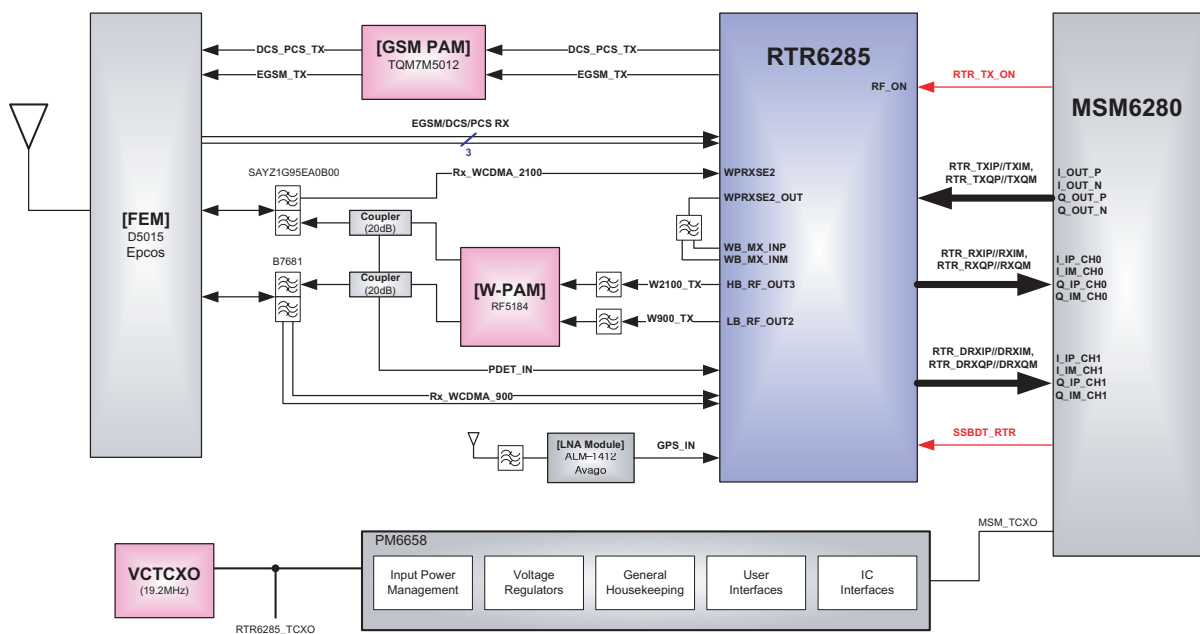
### 2.8 Charging

- Charging Method : CC & CV (Constant Current & Constant Voltage)
- Maximum Charging Voltage : 4.2V
- Maximum Charging Current : 600mA
- Nominal Battery Capacity : 1000 mAh
- Charger Voltage : 5.1V
- Charging time : Max 3 h (Except time trickle charging)
- Full charge indication current (icon stop current) : 80mA
- Low battery POP UP : 3.5V
- Low battery alarm interval : Idle - 3 min, Dedicated - 1min
- Cut-off voltage : 3.2V

## 3. TECHNICAL BRIEF

### 3.1 GENERAL DESCRIPTION

The KC910 supports UMTS-900, UMTS-2100, GSM-900, GSM-1800, and GSM-1900 based GSM/GPRS/EDGE/UMTS. All receivers and the UMTS transmitter use the radioOne<sup>1</sup>Zero-IF architecture to eliminate intermediate frequencies, directly converting signals between RF and baseband. The quad-band GSM transmitters use a baseband-to-IF upconversion followed by an offset phase-locked loop that translates the GMSK-modulated or 8-PSK-modulated signal to RF.



[Figure 1-1] Block diagram of RF part

<sup>1</sup> QUALCOMM's branded chipset that implements a Zero-IF radio architecture.

### 3. TECHNICAL BRIEF

---

MSM device) to an RF signal using an internal LO generated by integrated on-chip PLL and VCO. The RTR6285 IC outputs deliver fairly high-level RF signals that are first filtered by Tx SAWs and then amplified by their respective UMTS PAs.

In the GSM receive path, the received RF signals are applied through their band-pass filters and down-converted directly to baseband in the RTR6285 transceiver IC. These baseband outputs are shared with the UMTS receiver and routed to the MSM IC for further signal processing.

The GSM/EDGE transmit path employs one stage of up-conversion and, in order to improve efficiency, is divided into phase and amplitude components to produce an open-loop Polar topology:

1. The on-chip quadrature up-converter translates the GMSK-modulated signal or 8-PSK modulated signal, to a constant envelope phase signal at RF;
2. The amplitude-modulated (AM) component is applied to the ramping control pin of Polar power amplifier from a DAC within the MSM

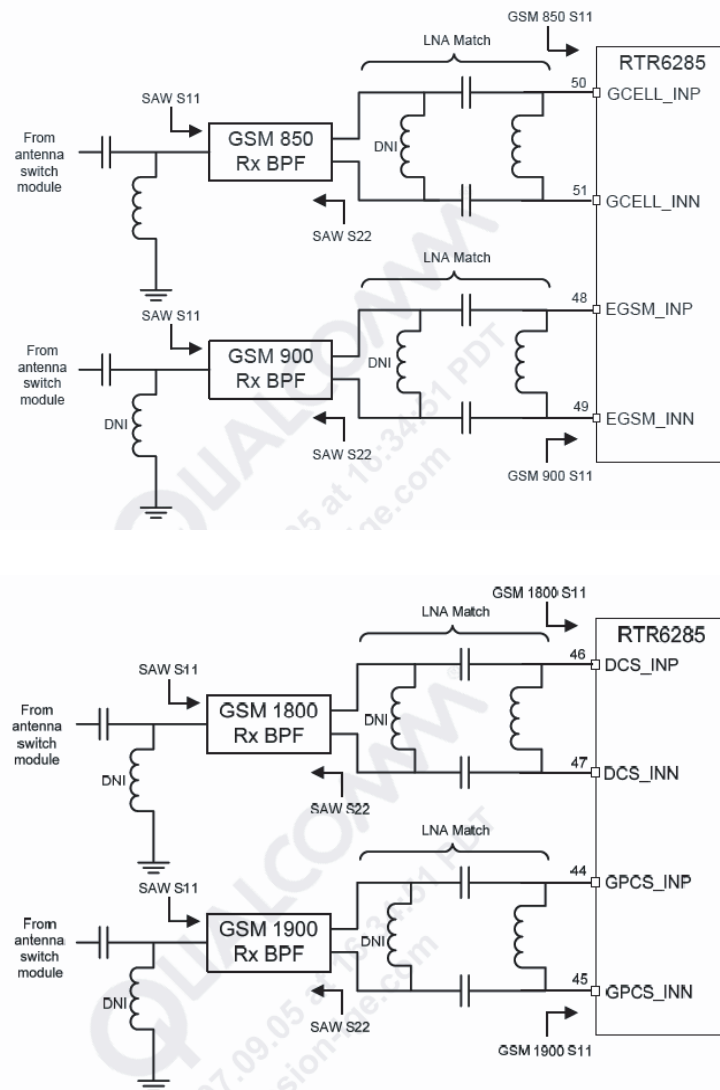
KC910 power supply voltages are managed and regulated by the PM6658 Power Management IC. This versatile device integrates all wireless handset power management, general housekeeping, and user interface support functions into a single mixed signal IC. It monitors and controls the external power source and coordinates battery recharging while maintaining the handset supply voltages using low dropout, programmable regulators.

The device's general housekeeping functions include an ADC and analog multiplexer circuit for monitoring on-chip voltage sources, charging status, and current flow, as well as userdefined off-chip variables such as temperature, RF output power, and battery ID. Various oscillator, clock, and counter circuits support IC and higher-level handset functions. Key parameters such as under-voltage lockout and crystal oscillator signal presence are monitored to protect against detrimental conditions.

### 3.2 GSM MODE

#### 3.2.1 GSM RECEIVER

The GSM-900, GSM-1800, and GSM-1900 receiver inputs of RTR6285 are connected directly to the transceiver front-end Module. GSM-900, GSM-1800, and GSM-1900 receiver inputs use differential configurations to improve common-mode rejection and second-order non-linearity performance as shown in Figure 1-2. The balance between the complementary signals is critical and must be maintained from the RF filter outputs all the way into the IC pins



[Figure 1-2] GSM Receiver Inputs Topologies



### 3. TECHNICAL BRIEF

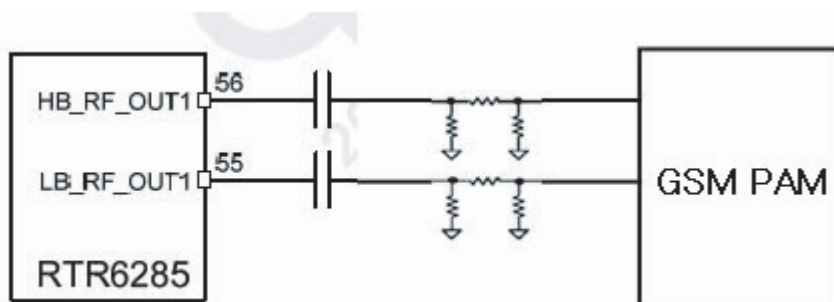
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Since GSM-900, GSM-1800, and GSM-1900 signals are time-division duplex (the handset can only receive or transmit at one time), switches are used to separate Rx and Tx signals in place of frequency duplexers - this is accomplished in the switch module. The GSM-900, GSM-1800, and GSM-1900 receive signals are routed to the RTR6285 through band selection filters and matching networks that transform single-ended 50- $\Omega$  sources to differential impedances optimized for gain and noise figure. The RTR input uses a differential configuration to improve second-order inter-modulation and common mode rejection performance. The RTR6285 input stages include MSM-controlled gain adjustments that maximize receiver dynamic range.

The amplifier outputs drive the RF ports of the quadrature RF-to-baseband downconverters. The downconverted baseband outputs are multiplexed and routed to lowpass filters (one I and one Q) having passband and stopband characteristics suitable for GMSK or 8-PSK processing. These filter circuits include DC offset corrections. The filter outputs are buffered and passed on to the MSM6280 IC for further processing as shown in Figure 1-4.

#### 3.2.2 GSM TRANSMITTER

The RTR6285 transmitter outputs(HB\_RF\_OUT1 and LB\_RF\_OUT1) include on-chip output matching inductors. 50ohm output impedance is achieved by adding a series capacitor at the output pins. The capacitor value may be optimized for specific applications and PCB characteristics based on pass-band symmetry about the band center frequency as shown in Figure 1-3.



[Figure 1-3] GSM Transmitter Outputs Topologies

The RTR6285 IC is able to support GSM 900 and GSM 1800/1900 mode transmitting. This design guideline shows a tri-band GSM application. Both high-band and low band outputs are followed by resistive pads to ensure that the load presented to the outputs remains close to 50ohm.

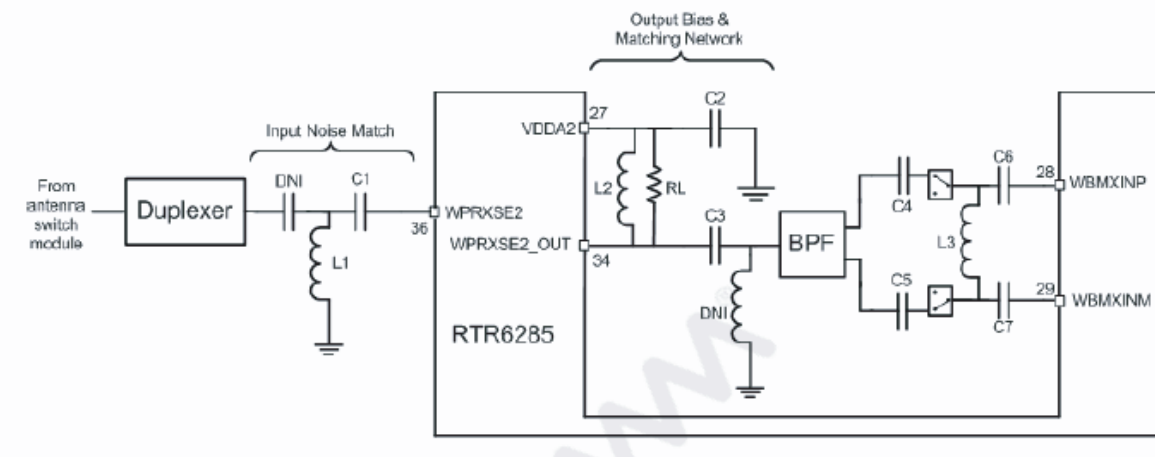
### 3.3 UMTS MODE

#### 3.3.1 UMTS RECEIVER

The UMTS duplexer receiver output is routed to LNA circuits within the RTR6285 device as shown in Figure 1-4. The UMTS Rx input is provided with an on-chip LNA that amplifies the signal before a second stage filter that provides differential downconverter as shown in Figure 1-5.

This second stage input is configured differentially to optimize second-order intermodulation and common mode rejection performance. The gain of the UMTS frontend amplifier and the UMTS second stage differential amplifier are adjustable, under MSM control, to extend the dynamic range of the receivers.

The second stage UMTS Rx amplifiers drive the RF ports of the quadrature RF-to-baseband downconverters. The downconverted UMTS Rx baseband outputs are routed to lowpass filters having passband and stopband characteristics suitable for UMTS Rx processing. These filter circuits allow DC offset corrections, and their differential outputs are buffered to interface shared with GSM Rx to the MSM IC. The UMTS baseband outputs are turned off when the RTR6285 is downconverting GSM signals and on when the UMTS is operating.



[Figure 1-4] UMTS Receiver Inputs Topologies

### 3. TECHNICAL BRIEF

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#### 3.3.2 UMTS TRANSMITTER

The UMTS Tx path begins with differential baseband signals (I and Q) from the MSM device. These analog input signals are amplified, filtered, and applied to the quadrature up-converter mixers. The up-converter output is amplified by multiple variable gain stages that provide transmit AGC control. The AGC output is filtered and applied to the driver amplifier; this output stage includes an integrated matching inductor that simplifies the external matching network to a single series capacitor to achieve the desired 50-Ω interface.

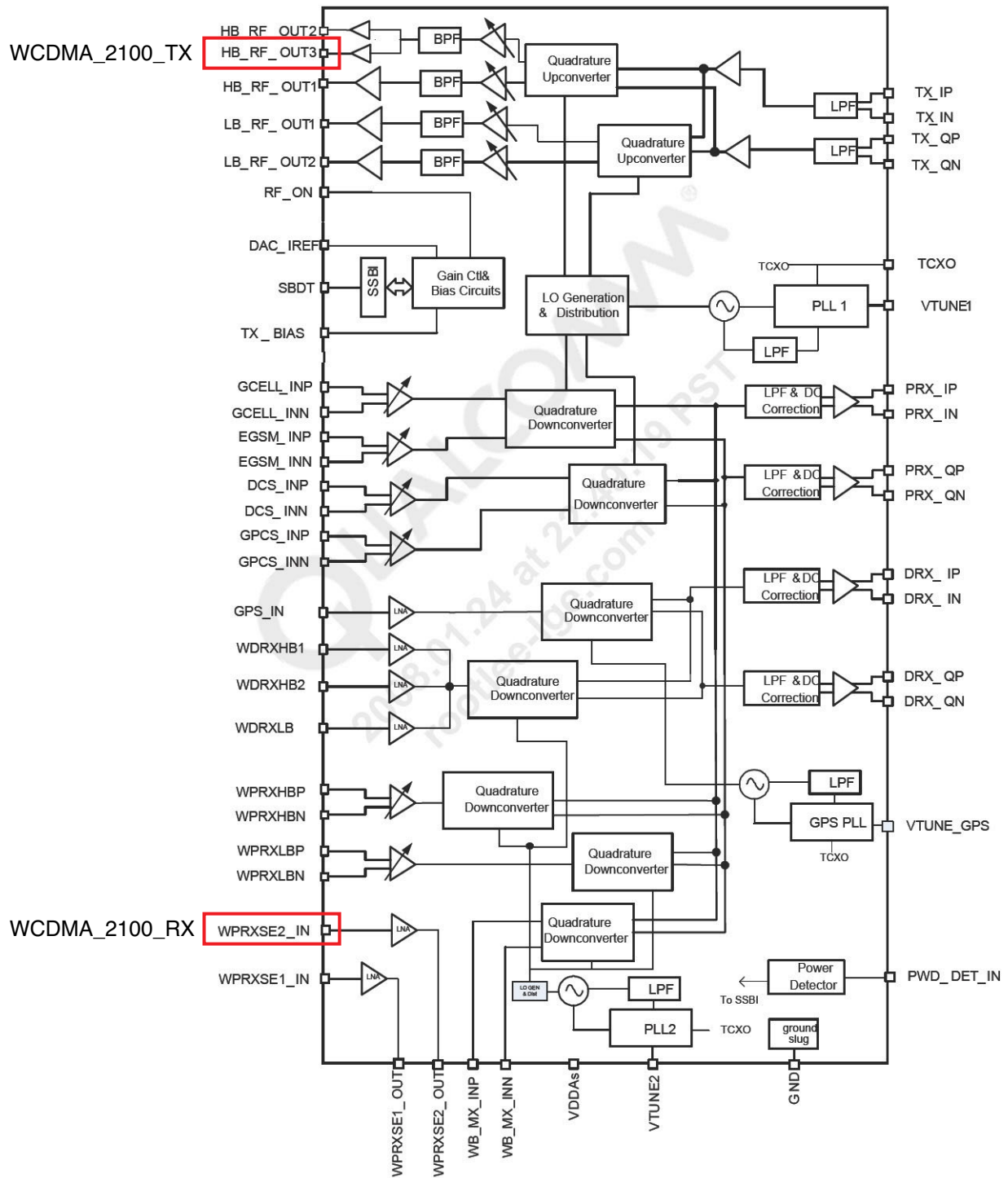
The RTR6285 UMTS output is routed to its power amplifier through a bandpass filter, and delivers fairly high-level signals that are filtered and applied to the PA. Transmit power is delivered from the duplexer to the antenna through the switch module.

The transceiver LO synthesizer is contained within the RTR6285 IC with the exception of the off-chip loop filter components and the VC-TCXO. This provides a simplified design for multimode applications. The PLL circuits include a reference divider, phase detector, charge pump, feedback divider, and digital logic generator.

UMTS Tx. Using only PLL1, the LO generation and distribution circuits create the necessary LO signals for nine different frequency converters. The UMTS transmitter also employs the ZIF architecture to translate the signal directly from baseband to RF. This requires FLO to equal FRF, and the RTR6285 IC design achieves this without allowing FVCO to equal FRF.

The RTR6285 IC is able to support UMTS 2100/1900/1800/1700 and 850 mode transmitting. This design guideline shows only UMTS 2100 applications.

### 3. TECHNICAL BRIEF



[Figure 1.5] RTR6285 IC Functional Block Diagram

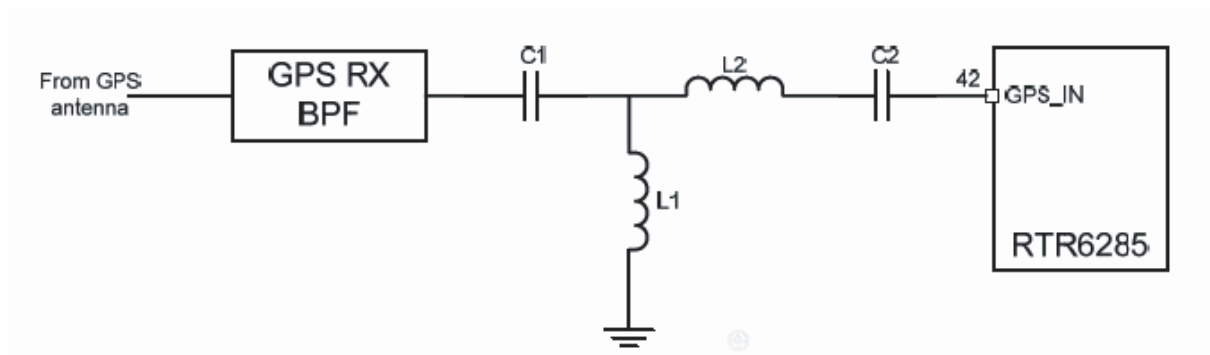
### 3. TECHNICAL BRIEF

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## 3.4 GPS MODE

### 3.4.1 GPS RECEIVER

The GPS receiver input employs a single-ended connection realized by this pin. The GPS input is routed from the GPS antenna switch, through a band pass filter and then an impedance transformer circuit that optimally matches the impedance looking into the GPS LNA. The impedance transformer circuit topology is shown in Figure 1-6.



[Figure 1.6] GPS Input Network Topology

### 3.5 LO GENERATION and DISTRIBUTION CIRCUIT

#### 3.5.1 UMTS PAM (U105: AWT6277R)

The integrated LO generation and distribution circuits are driven by internal VCOs to support various modes to yield highly flexible quadrature LO outputs that drive all GSM/EDGE, UMTS band and GPS up-converters and down-converters; with the help of these LO generation and distribution circuits, true zero-IF architecture is employed in all GSM and UMTS band receivers and transmitters to translate the signal directly from RF-to-baseband and from baseband-to-RF.

Two fully functional fraction-N synthesizers, including VCOs and loop filters, are integrated within the RTR6285 IC. In addition, the RTR6285 has a third synthesizer used for GPS operation. The first synthesizer (PLL1) in the RTR6285 creates the transceiver Los that support the UMTS transmitter, and all four GSM band receivers and transmitters including: GSM850, GSM900, GSM1800, and GSM1900. The second synthesizer (PLL2) in the RTR6285 IC provides the LO for the UMTS primary receiver. For the RTR6285 IC only, the second synthesizer also provides the LO for the secondary UMTS receiver. The third synthesizer (PLL3), only in the RTR6285 IC, provides the LO for the GPS receiver.

An external TCXO input signal is required to provide the synthesizer frequency reference to which the PLL is phase and frequency locked. The RTR6285 ICs integrate most of the PLL loop filter components on-chip except for three off-chip loop filter-series capacitors, which significantly reduces off-chip component requirement. With the integrated fractional-N PLL synthesizers, the RTR6285 ICs have the advantage of more flexible loop bandwidth control, fast lock time, and low-integrated phase error.



### 3.6.2 VCTCXO(X1000: TG-5010LH(19.2M))

The Voltage Controlled Temperature Compensated Crystal Oscillator (VCTCXO) provides the reference frequency for all RFIC synthesizers as well as clock generation functions within the MSM6285 IC. The oscillator frequency is controlled by the MSM6285 ICs.

TRK\_LO\_ADJ pulse density modulated signal in the same manner as the transmit gain control TX\_AGC\_ADJ. A two-pole RC lowpass filter is recommended on this control line. The PM6658 IC controls the handset power-up sequence, including a special VCTCXO warm-up interval before other circuits are turned on. This warm-up interval (as well as other TCXO controller functions) is enabled by the MSM TCXO\_EN line. The PM6658 IC VREG\_TCXO regulated output voltage is used to power the VCTCXO and is enabled before most other regulated outputs.

Any GSM mode power control circuits within the MSM6280 IC require a reference voltage for proper operation and sufficient accuracy. Connecting the PM6658 IC REF\_OUT directly to the MSM6280 IC GSM\_PA\_PWR\_CTL\_REF provides this reference. This sensitive analog signal needs a 0.1  $\mu$ F low frequency filter near to MSM side, and isolate from digital logic and clock traces with ground on both sides, plus ground above and below if routed on internal layers.

### 3.6.3 FEM(FL1000:D5015)

This equipment uses a single antenna to support all handset operating modes, with an antenna switch module select the operating frequency and band. UMTS operation requires simultaneous reception and transmission, so the UMTS Rx/Tx connection is routed to a duplexer that separates receive and transmit signals. The active connection is MSM-selected by three control lines (GPIO[9], GPIO[10], GPIO[11] and GPIO[12]). These GPIOs are programmed to be ANT\_SEL0, ANT\_SEL1, ANT\_SEL2 and ANT\_SEL3 respectively.

	ANT_SEL0	ANT_SEL1	ANT_SEL2	ANT_SEL3
GSM 850/EGSM TX	HIGH	HIGH	LOW	LOW
PCN/PCS TX	HIGH	LOW	LOW	LOW
WB850	LOW	HIGH	LOW	HIGH
WB1900	LOW	LOW	LOW	HIGH
WB2100	LOW	LOW	HIGH	HIGH
GSM850 RX	LOW	HIGH	HIGH	LOW
EGSM RX	LOW	LOW	HIGH	LOW
PCN RX	LOW	HIGH	LOW	LOW
PCS RX	LOW	LOW	LOW	LOW

**Table 1. FEM(Front-End Module) control logic**



## 3. TECHNICAL BRIEF

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### 3.6.4 PMIC(U500:PM6658)

#### 1. The Input power management

- Valid external supply attachment and removal detection
- Supports unregulated (closed-loop) external charger supplies and USB supplies as input power sources
- Supports lithium-ion main batteries
- Trickle, constant current, constant voltage, and pulsed charging of the main battery
- Supports coin cell backup battery (including charging)
- Battery voltage detectors with programmable thresholds
- VDD collapse protection
- Charger current regulation and real-time monitoring for over-current protection
- Charger transistor protection by power limit control
- Control drivers for the internal pass transistors and one (optional) external battery MOSFET
- Voltage, current, and power control loops
- Automated recovery from sudden momentary power loss

#### 2. Output voltage regulation

- One boost (step-up) switched-mode power supply (SMPS) that generates the +5 output for USB-OTG host mode, for powering the speaker driver to achieve 1 W audio output level, and for driving a camera flash
- Three buck (step-down) switched-mode power supplies that efficiently generate the
- MSM core voltage (VREG\_MSMC) and two general purpose supplies (S2 and S3)
- External controls (OPT\_1 and OPT\_2) establish the VREG\_MSMC default voltage as 1.200 or 1.375 V (to match the MSM device requirements) and determine whether the S3 SMPS is enabled or not upon power-up
- Supports dynamic voltage scaling (DVS) for the VREG\_MSMC output
- Fifteen low-dropout linear regulator circuits with programmable output voltages, implemented using three different current ratings:
- Six at 300 mA: MSMA, MSMP, RFRX1, RFTX, RFUBM, and GP3
- Seven at 150 mA: MMC, MSME, RFRX2, RUIM, WLAN, GP1, and GP2
- Two at 50 mA: TCXO and USB
- All regulators can be individually enabled/disabled for power savings
- Low power mode available on most regulators
- All regulated outputs are derived from a common reference - close tracking

#### 3. Integrated handset-level housekeeping functions reduces external parts count, size, cost

- Analog multiplexer selects from five internal and up to eighteen external inputs
- Multiplexer output's offset and gain are adjusted, increasing the effective MSM HKADC resolution
- Adjusted multiplexer output is buffered and routed to the MSM device
- Two TCXO controller and buffer circuits for synchronized and deglitched clocks
- One for conditioning the MSM device's TCXO signal (as usual)
- One for conditioning a second TCXO signal that can be used to run WLAN devices (Bluetooth or 802.11) even while the MSM device is in its sleep mode
- Internal divide-by-2 circuit allows the option of using a 38.4 MHz source in place of the usual 19.2 MHz for UMTS applications
- Redundant sleep oscillators - 32.768 kHz off-chip crystal and on-chip RC assures the MSM device's sleep clock
- If the real-time clock and sudden momentary power loss features are not supported, the 19.2 MHz TCXO signal can be used as the SLEEP\_CLK source - eliminating the external 32.768 kHz crystal
- Oscillator detector and automated switch-over to on-chip RC if oscillator halts
- On-chip adjustments minimize crystal oscillator frequency errors
- Real time clock for tracking time and generating associated alarms
- Buffered VREF signals are available at the multi-purpose pins
- Three-stage over-temperature protection (smart thermal control)

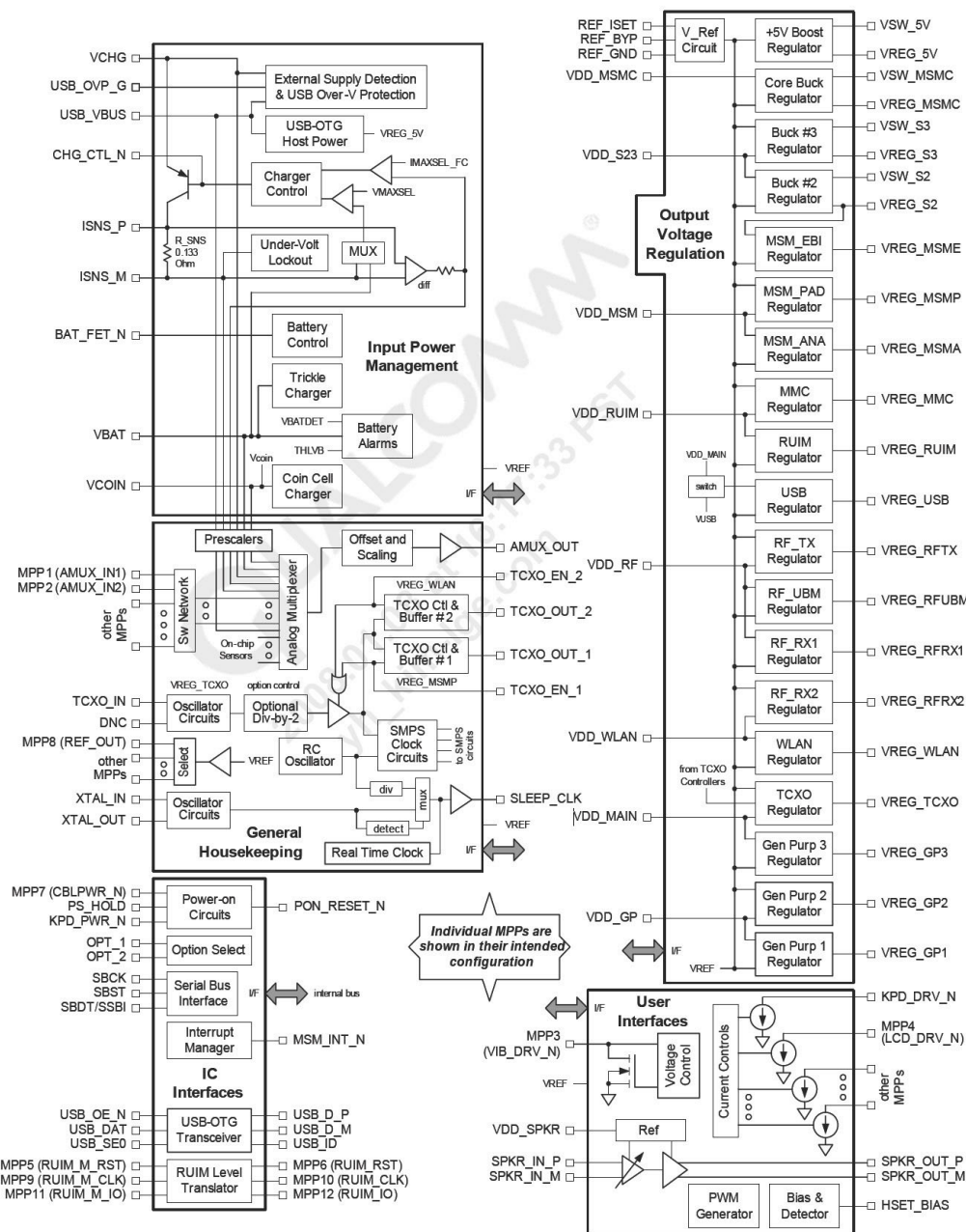
#### 4. Integrated handset-level user interfaces

- Four programmable current sinks recommended as keypad backlight, LCD backlight, camera flash, and general-purpose drivers
- Vibration motor driver programmable from 1.2 to 3.1V in 100 mV increments
- Speaker driver with programmable gain, turn-on time, and muting; differential operation (drives external 8  $\Omega$  speakers with volume controlled 500 mW)
- IC-level interfaces
- MSM device-compatible 3-line SBI for efficient initialization, status, and control
- Supports the MSM device's interrupt processing with an internal interrupt manager
- Many functions monitored and reported through real-time and interrupt status signals
- Dedicated circuits for controlled power-on sequencing, including the MSM device's reset signal
- Several events continuously monitored for triggering power-on/power-off sequences
- Supports and orchestrates soft resets
- USB-OTG transceiver for full-speed (12 Mb/s) and low speed (1.5 Mb/s) interfacing of the MSM device to computers as a USB peripheral, or connecting the MSM device to other peripherals
- RUIM level translators enable MSM device interfacing with external modules

### 3. TECHNICAL BRIEF

Twelve multi-purpose pins that can be configured as digital or analog I/Os, bidirectional I/Os, or current sinks. Their intended functions - as reflected in their pin names - are: RUIM/USIM level translators (six pins), power-on circuits (1 pin), analog multiplexer inputs (two pins), current drivers (two pins), and a buffered reference voltage output (one pin).

Highly integrated functionality in a small package - 97-pin CSP with several center ground pins for electrical ground, mechanical stability, and thermal relief

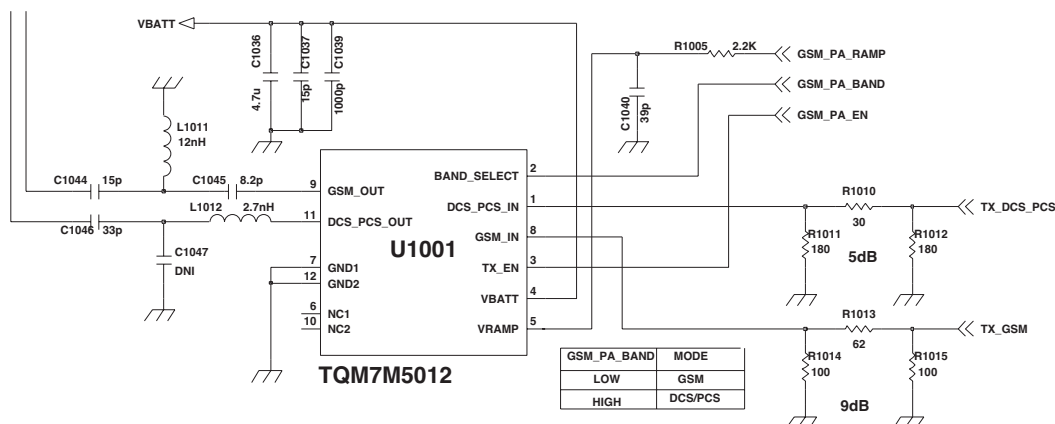


[Figure 1.8] PM6658 Block diagram

### 3.6.5 GSM PAM(U1001:TQM7M5012)

The TQM7M5012 Power Amplifier Module (PAM) is designed in a compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, PCS1900, and supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of a GSM850/900 PA block and a DCS1800/PCS1900 PA block, impedance matching circuitry for 50  $\Omega$  input and output impedances, and a Power Amplifier Control (PAC) block. A custom CMOS integrated circuit provides the internal PAC function and interface circuitry. Two separate Hetero-junction Bipolar Transistor (HBT) PA blocks are fabricated onto InGaP/GaAs die; one supports the GSM850/900 bands, the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The GaAs die, the silicon die, and the passive components are mounted on a multilayer laminate substrate and the entire assembly is encapsulated with plastic overmold.



[Figure 1.9] GSM PAM Schematic

### 3.6 6 ALM-1412(U1004:GPS LNA)

The ALM-1412 is an LNA module, with integrated filter, designed for GPS band applications at 1.575GHz. The LNA uses AVAGO Technologies' proprietary GaAs Enhancement-mode pHEMT process to achieve high gain with very low noise figure and high linearity. Noise figure distribution is very tightly controlled. A CMOS-compatible shutdown pin is included either for turning the LNA on/off, or for current adjustment. The integrated filter utilizes an Avago Technologies' leading edge FBAR filter for exceptional rejection at Cell/PCS Band frequencies. The ALM-1412 is useable down to 1V operation. It achieves low noise figure, high gain and linearity even at 1V, making it suitable for use in critical low-power GPS applications or during low-battery situations.

### 3. TECHNICAL BRIEF

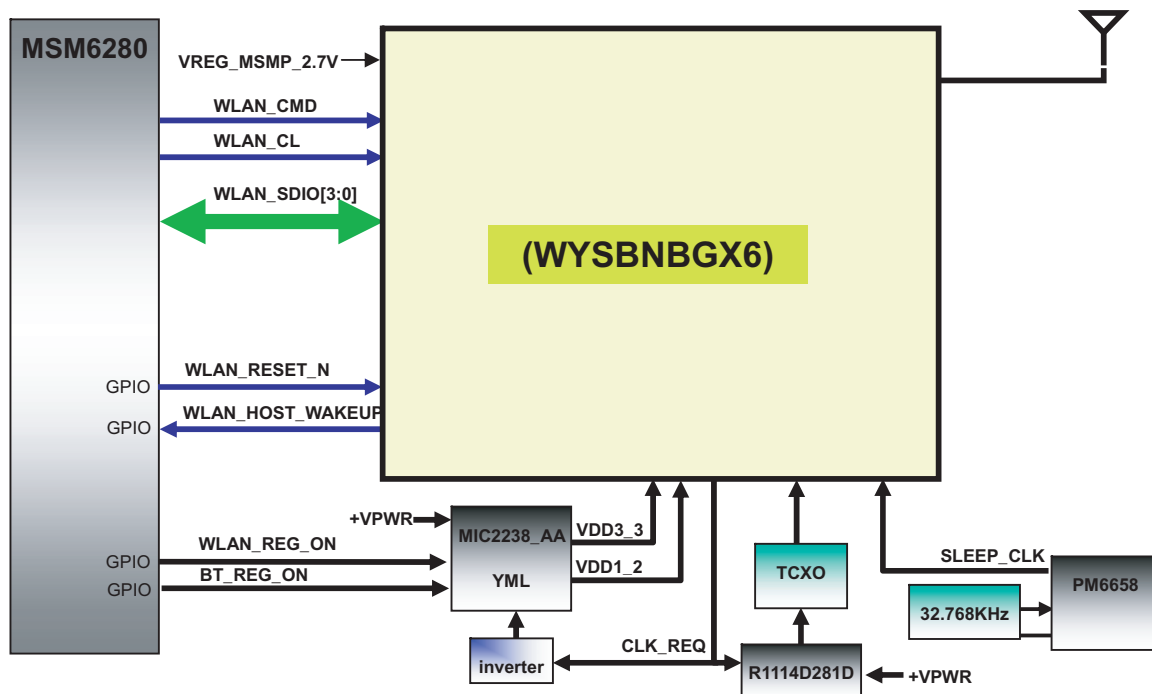
#### 3.6 7 WLAN/Bluetooth/FM (WYSBNGX6)

The KC910 device provides the highest level of integration for a mobile wireless system, with integrated IEEE802.11 b/g (MAC/baseband/radio), Bluetooth 2.0, and FM receiver. The WYSBNGX6 that is included of BCM4325 solution is supported three kinds of functions. It is the one antenna structure which is supported of WLAN/Bluetooth in 2.4GHz band.

##### WLAN

The KC910 supports single-band 2.4GHz IEEE802.11b/g standardization. The WLAN module which is consisted of the BCM4325 single chip device provides for the highest level of integration for a mobile or handheld wireless system, with integrated IEEE802.11b/g (MAC/baseband/radio). The BCM4325's integrated CMOS WLAN 2.4GHz power amplifier provide sufficient output power to meet the need of most WLAN devices. The interface between MSM6280 and WLAN module is the standard interfaces SDIO v1.2 (4-bit and 1-bit).

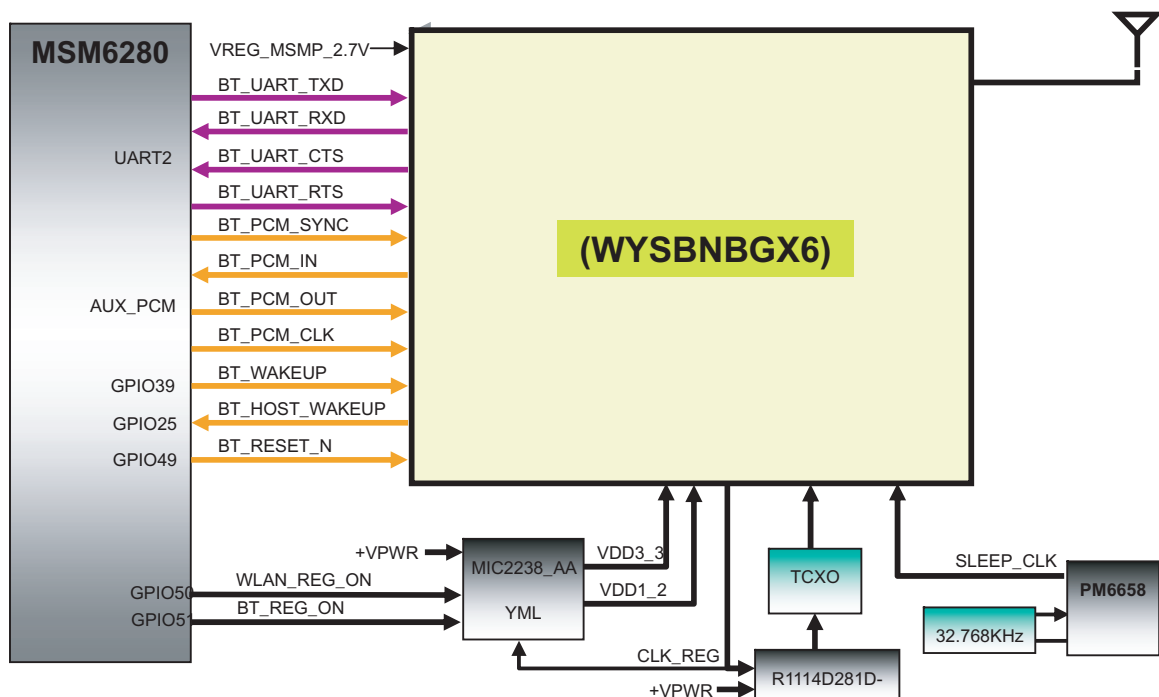
Figure 1.9 shows the WLAN system architecture in the KC910.



[Figure 1.10] WLAN system architecture

#### Bluetooth

The KC910 provides the Bluetooth 2.0 specification. The Bluetooth module is the optimal solution for any voice or data application that requires the Bluetooth SIG standard Host Controller Interface (HCI) using a high-speed UART and PCM. The Bluetooth solution has an integrated radio transceiver that has been optimized for 2.4GHz Bluetooth wireless systems. It has been designed to provide low-power, low-cost, robust communications for applications operating in the globally available 2.4GHz unlicensed ISM band. It is fully compliant with the Bluetooth Radio Specification and meets or exceeds the requirements to provide the highest communication link quality of service. Figure 1.10 shows the Bluetooth system architecture in the KC910.

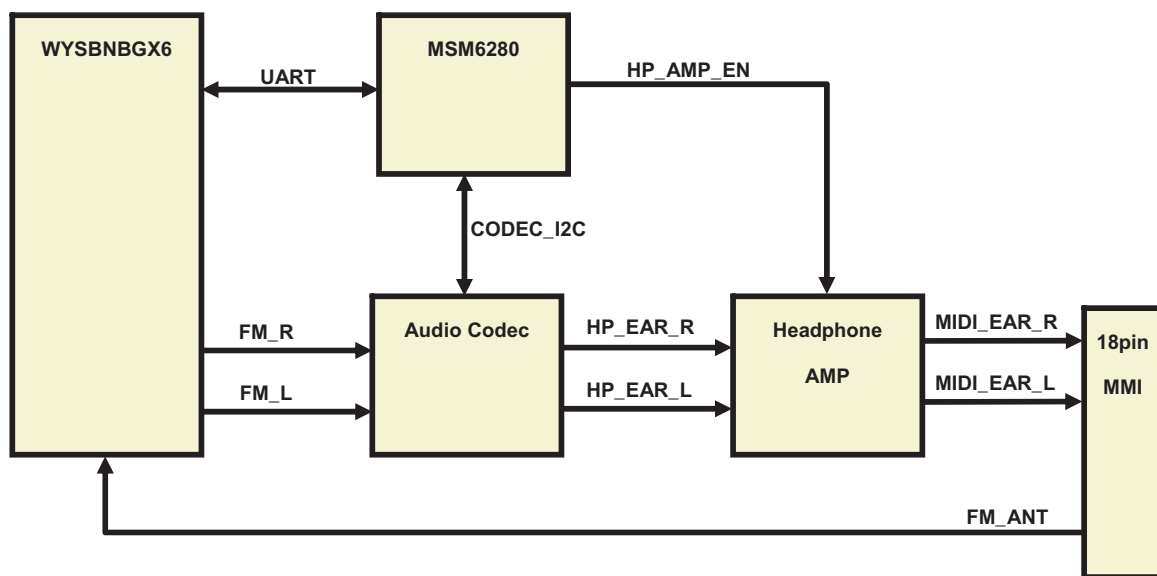


[Figure 1.11] Bluetooth system architecture

### 3. TECHNICAL BRIEF

#### FM Radio

This FM is a function of WYSBNBGX6 module, electronically tuned, FM stereo radio with RDS/RBDS demodulator and decoder for low voltage applications, with fully integrated IF selectivity and demodulation. This equipment supports the European Radio Data System (RDS) and the North American Radio Broadcast Data System (RBDS) modulations. The FM unit supports I2C for communications, stereo analog output, as well as I2S and PCM interfaces. Figure1.11 shows the FM Radio system architecture in the KC910.



[Figure 1.12] FM Radio system architecture

### 3.7 Digital Baseband (DBB/MSM6280)

#### 3.7.1 General Description

##### A. Features (MSM6280)

- Support for multimode operation - HSDPA, tri-band WCDMA (UMTS), quad GSM/GPRS/EDGE
- Support for HSDPA downlink up to 7.2Mbps (initial commercial release will support 3.6Mbps)
- HSDPA. Later releases will have support for 7.2 Mbps HSDPA)
- Support for WCDMA (UMTS) uplink data rate up to 384 kbps
- High-performance ARM926EJ-S running at up to 225 MHz (later at 270 MHz for 7.2 Mbps HSDPA)
- ARM Jazelle Java hardware acceleration for faster Java-based games and other applets
- QDSP4000 high-performance DSP cores
- Integrated Bluetooth 1.2 baseband processor for wireless connectivity to peripherals
- Qcamera, with 15 fps QVGA viewfinder resolution, and support for 4 MP camera sensors
- Direct interface to digital camera module with video front end (VFE) image processing
- True 3D graphics for advanced wireless gaming
- SecureMSM v2.0 includes support for Open Mobile Alliance (OMA) DRM v2.0, SIM-lock and IMEI integrity. Support for Q-fuse.
- Audio on par with portable music players
- Vocoder support (AMR, FR, EFR, HR)
- Advanced 14 x 14 mm, 0.5 mm pitch, 409-pin lead-free CSP packaging technology
- SD/SDIO hardware support



### 3. TECHNICAL BRIEF

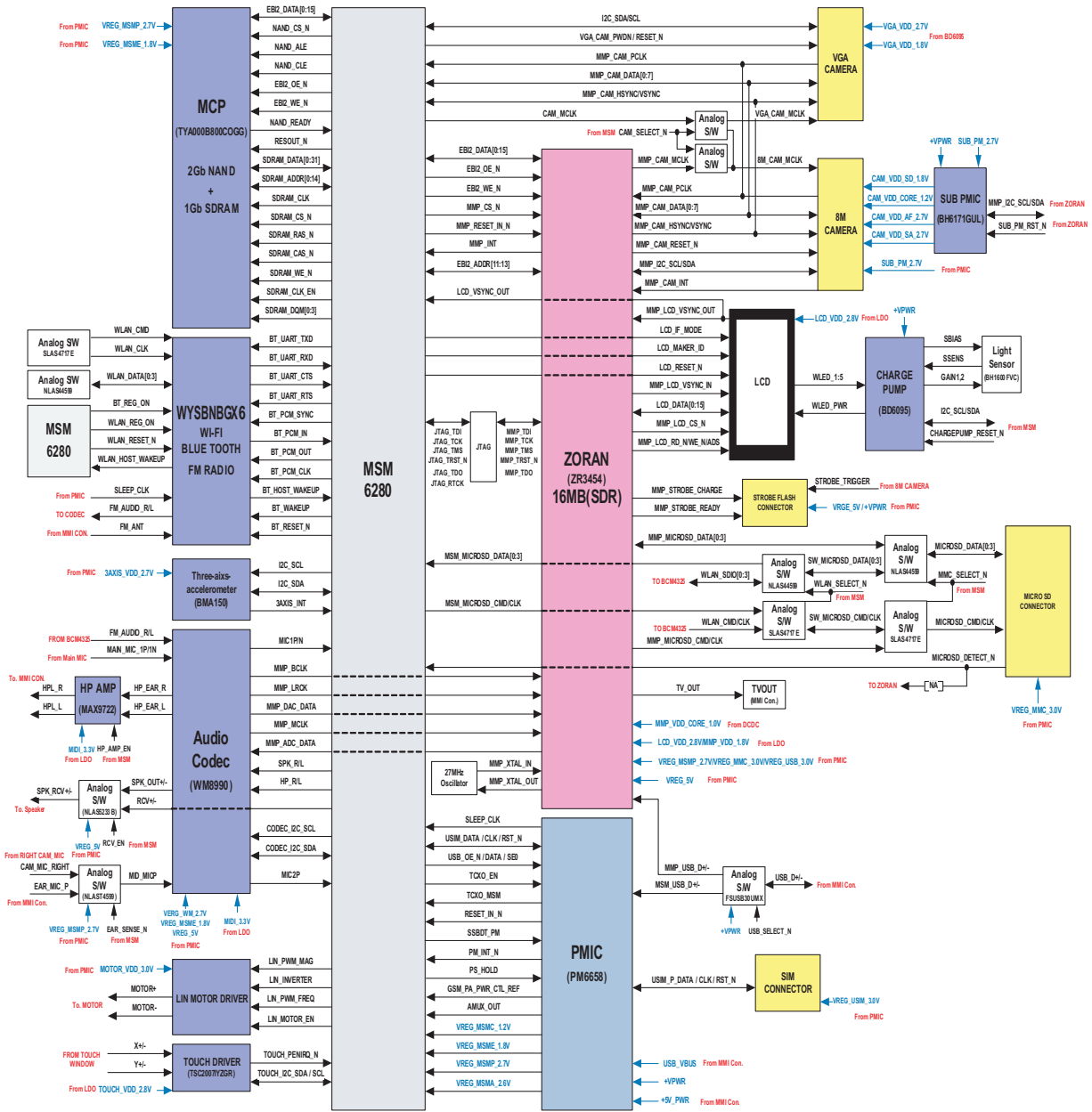


Figure. Simplified Block Diagram of Baseband

### 3. TECHNICAL BRIEF

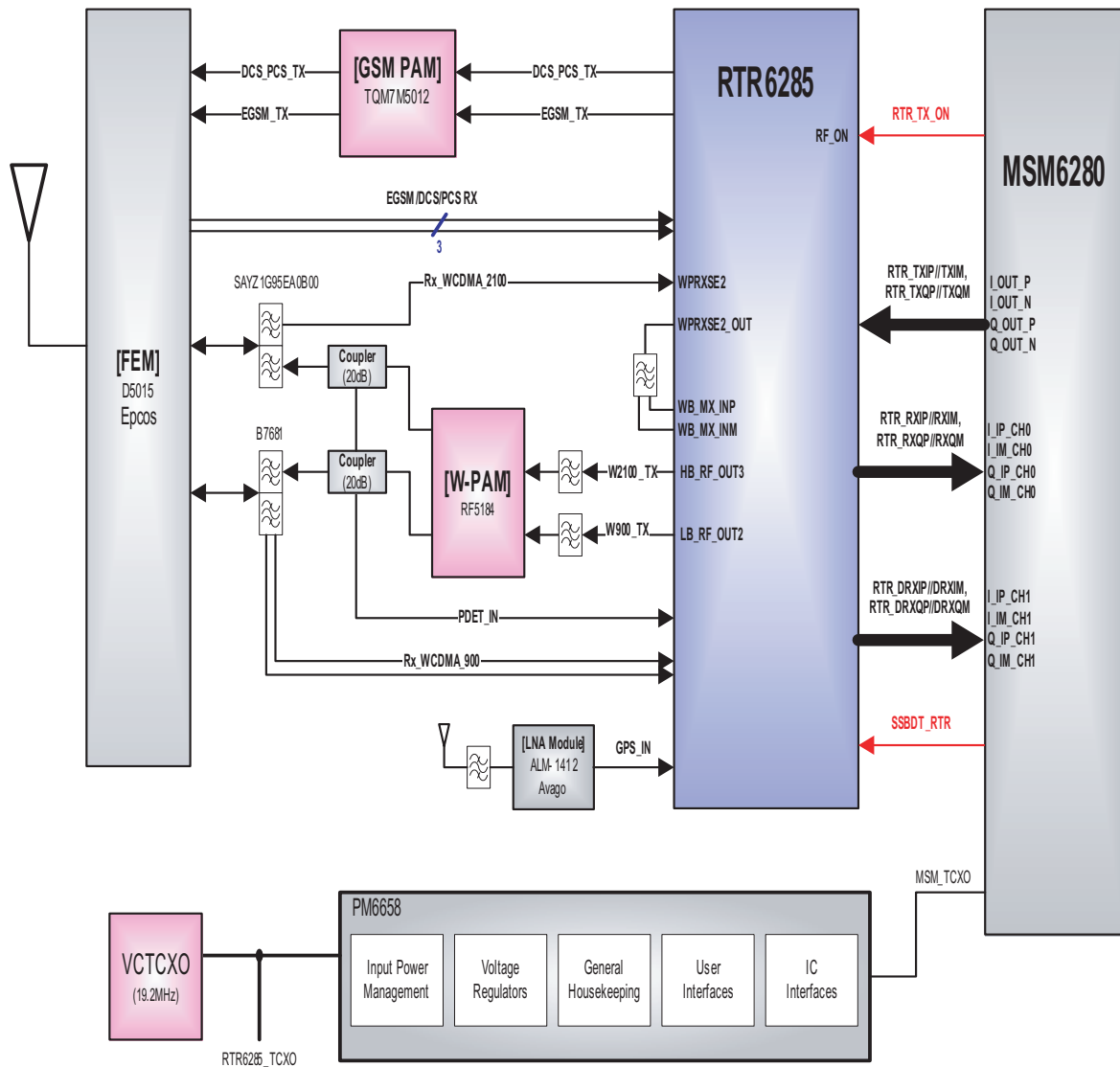


Figure. Simplified Block Diagram of RF

## 3. TECHNICAL BRIEF

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### 3.8 Subsystem(MSM6280)

#### 3.8.1 ARM Microprocessor Subsystem

The MSM6280 device uses an embedded ARM926EJ-S microprocessor. This microprocessor, through the system software, controls most of the functionality for the MSM, including control of the external peripherals such as the keypad, LCD, SDRAM, and NAND-Flash devices. Through a QUALCOMM proprietary serial bus interface (SBI) the ARM926EJ-S configures and controls the functionality of the RTR6285, RFR6275 and PM6658 devices.

#### 3.8.2 WCDMA R99 features

The MSM6280 device supports release 99 June 2004 of the W-CDMA FDD standard, including the following features:

- All modes and data rates for W-CDMA frequency division duplex (FDD), with the following restrictions:
  - The downlink supports the following specifications:
    - Up to four physical channels, including the broadcast channel (BCH), if present
    - Up to three dedicated physical channels (DPCHs)
    - Spreading factor (SF) range support from 4 to 256
    - The following transmit diversity modes are supported:
      - Space time transmit diversity (STTD)
      - Time-switched transmit diversity (TSTD)
      - Closed-loop feedback transmit diversity (CLTD)
- The uplink supports the following specifications:
  - The uplink provides the following UE support:
    - One physical channel, eight TrCH, and 16 TrBks starting at any frame boundary
    - A maximum data rate of 384 kbps
  - Full SF range support from 4 to 256
- SMS (CS and PS)
- PS data rate - 384 kbps DL / 384 kbps UL
- CS data rate - 64 kbps DL / 64 kbps UL
- AMR (all rates)

### 3.8.3 HSDPA features

The MSM6280 device supports the HSDPA release 5 standard:

- Supports HS-DSCH (HS-SCCH, HS-PDSCH and HS-DPCCH) in addition to the R99 transport channels as defined in 3GPP specifications.
- Supports a maximum of four simultaneous HS-SCCH channels as defined in 3GPP specifications.
- Supports a maximum of 10 HS-PDSCH channels and supports both QPSK and 16 QAM modulation. It supports UE category 6 in SW release 2.0 and category 8 in SW release 4.0.
- Supports CQI, and ACK/NACK on HS-DPCCH channel as defined in 3GPP specifications.
- Supports all incremental redundancy versions for HARQ, as defined in 3GPP specifications.
- Can switch between HS-PDSCH and DPCH channel resources, as directed by the network.
- Can be configured to support any of the two power classes 3 or 4 as defined in 3GPP R5 specifications (25.101).
- Supports network activation of compressed mode by SF/2 or HLS on the DPCH for conducting inter-frequency or inter-RAT measurements when the HS-DSCH is active.
- Supports STTD on both associated DPCH and HS-DSCH simultaneously.
- Supports CLTD mode 1 on the DPCH when the HS-PDSCH is active.
- Supports STTD on HS-SCCH when either STTD or CLTD Mode 1 are configured on the associated DPCH.
- Supports TFC selection limitation on the UL factoring in the transmissions on the HS-DPCCH as required in TS 25.133.

## 3. TECHNICAL BRIEF

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### 3.8.4 GSM features

The following GSM modes and data rates are supported by the MSM6280 device hardware. Support modes conform to release '99 specifications of the sub-feature.

#### ■ Voice features

- ☐ FR
- ☐ EFR
- ☐ AMR
- ☐ HR
- ☐ A5/1, A5/2, and A5/3 ciphering

#### ■ Circuit-switched data features

- ☐ 9.6k
- ☐ 14.4k
- ☐ Fax
- ☐ Transparent and non-transparent modes for CS data and fax
- ☐ No sub-rates are supported.

### 3.8.5 GPRS features

#### ■ Packet switched data (GPRS)

- ☐ DTM (Simple Class A) operation
- ☐ Multi-slot class 12 data services
- ☐ CS schemes: CS1, CS2, CS3, and CS4
- ☐ GEA1, GEA2, and GEA3 ciphering

#### ■ Maximum of four Rx timeslots per frame

### 3.8.6 EDGE features

- EDGE E2 power class for 8 PSK
- DTM (simple Class A), multi-slot class 12
- Downlink coding schemes - CS 1-4, MCS 1-9
- Uplink coding schemes - CS 1-4, MCS 1-9
- BEP reporting
- SRB loopback and test mode B
- 8-bit, 11-bit RACH
- PBCCH support
- phase/2 phase access procedures
- Link adaptation and IR
- NACC, extended UL TBF.

### 3.8.7 MSM6280 device audio processing features

- Integrated wideband stereo CODEC
  - 16-bit DAC with typical 88 dB dynamic range
  - Supports sampling rates up to 48 kHz on the speaker path and 16 kHz on the microphone path
- VR- Voice mail + voice memo
- Acoustic echo cancellation
- Audio AGC
- Audio Codecs: AMR-NB, AAC, AAC Plus, Enhanced AAC Plus, Windows Audio v9, Real Audio 8 (G2)
- Internal vocoder supporting AMR, FR, EFR, and HR

### 3.8.8 MSM6280 microprocessor subsystem

- Industry standard ARM926EJ-S embedded microprocessor subsystem
  - 16 kB instruction and 16 kB data cache
  - Instruction set compatible with ARM7TDMI®
  - ARM version 5TEJ instructions
  - Higher performance 5 stage pipeline, Harvard cached architecture
  - Higher internal CPU clock rate with on-chip cache
- Java hardware acceleration
- Enhanced memory support

Please note that NOR/PSRAM will not be supported on MSM6280.

  - 75 MHz and 90 MHz bus clock for SDRAM
  - 32-bit SDRAM
  - Dual memory buses separating the high-speed memory subsystem (EBI1) from low-speed peripherals (EBI2) such as LCD panels
  - 1.8 V or 2.6 V memory interface support (excluding EBI1)
  - NAND FLASH memory interface
    - 8/16-bit data I/O width NAND flash support
    - 1- or 4-bit ECC
    - 512-byte/2KB page-size support
    - 2 chip selects supported for NAND Flash
  - Boot from NAND
  - Low-power SDRAM (LP-SDRAM) interface
- Internal watchdog and sleep timers

## 3. TECHNICAL BRIEF

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### 3.8.9 Supported interface features

- USB On-the-Go core supports both slave and host functionality
- Three universal asynchronous receiver transmitter (UART) serial ports
- USIM controller (via UART)
- Integrated 4-bit secure digital (SD) controller for SD and Mini SD cards
- Parallel LCD interface
- General-purpose I/O pins
- External keypad interface

### 3.8.10 Supported multimedia features

- Provide additional general purpose MIPS by using:
  - Two QDSP4000s
  - Dedicated hardware accelerators and compression engines
- Improve Java, BREW, and game performance
  - Integrated Java and 2D/3D graphics accelerator with Sprite engine
- Enable various accessories via USB host connectivity.
  - Integrated USB host controller functionality
- Enable compelling visual and audio applications.

#### **Qcamera™**

- High-quality digital camera processing, supporting CCD or CMOS image sensors up to 4-megapixel with 15 fps capture rate
- 15 fps QVGA viewfinder

#### **Qtv™**

- Audio and video decoder that supports VOD, MOD and Broadcast multimedia services.
- Audio Codecs supported: AMR-NB, AAC, AAC Plus, Enhanced AAC Plus, Windows®
- Audio v9, RealAudio® v8
- Integrated stereo wideband Codec for music/digital clips
- CMX
- Video Codecs supported: MPEG-4, H.263, H.264, Windows Media® v9 and RealNetworks® v10

#### **Video telephony services: Qvideophone™**

- A two-way mobile video conferencing solution that delivers 15 fps @ QCIF
- Video Codecs supported: MPEG-4 and H.263
- Audio Codecs supported: AMR-NB.

#### **Qcamcorder™**

- Real time mobile video encoder
- Video Codecs supported: MPEG-4, H.263.H.264
- Audio Codecs supported: AMR-NB, AAC
- Recording performance: 15 fps @ QVGA, 384 kbps

#### **gpsOne™**

- Integrated gpsOne processing
- Standalone gpsOne mode in which the handset acts as a GPS receiver

#### **CMX™** (MIDI and still image, animation, text, LED/vibrate support)

- 72 simultaneous polyphonic tones
- 44 kHz sampling rate
- 512 kB wave table
- Support of universal file formats
  - ☐ Standard MIDI Format (SMF)
  - ☐ SP-MIDI
  - ☐ SMAF Audio playback (MA-2, MA-3, MA-5)
  - ☐ XMF/OLS
  - ☐ MFi (requires Docomo license)
- PNG decoder
- Pitch bend range support
- LED/vibrate support
- Scalable Vector Graphics (SVG- Tiny 1.1 + SVG Tiny 1.2)
- MLZ decoder
- Integrated PNG/SAF A.T.



### 3. TECHNICAL BRIEF

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**Table 1-1 Summary of MSM6280 device features**

Features	MSM6280 device
Processor	ARM926 EJ-S – 225 MHz and 270 MHz (for 3.6 Mbps and 7.2 Mbps HSDPA) ADSP – 75 MHz and 90 MHz (for 3.6 Mbps and 7.2 Mbps HSDPA) MDSP – 61.44 MHz
Process technology	90 nm
Broadcast	TSIF (dedicated)
High speed serial interface	Mobile display digital interface (MDDI)
Security/digital rights management	OMA DRM v2.0 Q-fuse supported
Supported RF platforms	Tri-band UMTS (3U), Platform B (RFCMOS), Platform D (Diversity)
gpsOne	Supported
16-bit burst NOR flash + 16-bit or 32-bit burst PSRAM	Not supported
8-bit or 16-bit NAND flash + 32-bit SDRAM	Supported <b>Only 32-bit SDRAM supported</b>
USB	USB-OTG
Qcamcorder	15 fps @ QVGA, 15 fps QVGA viewfinder
Qtv (video decode)	30 fps @ QVGA playback 15 fps @ QVGA streaming
Qvideophone (video telephony)	15 fps @ QCIF
Qcamera (camera interface)	4M pixel support
Audio/video decoders	MP3, AAC, AAC+, Enhanced AAC+ ADPCM, MP4, H.263, H.264, Windows Media, Real
2D/3D graphics HW acceleration	HW – 100K triangles/sec

### 3.8.11 Serial Bus Interface(SBI)

The MSM6280 device's SSBI is designed specifically to be a quick, low pin count control protocol for QUALCOMM's RTR6285, RFR6275 and PM6658 ASICs. Using the SSBI, the RTR6285, RFR6275, and PM6658 devices can be configured for different operating modes and for minimum power consumption, extending battery life in Standby mode. The SSBI also controls DC baseband offset errors.

### 3.8.12 Wideband CODEC

The MSM6280 device integrates a wideband voice/audio CODEC into the mobile station modem (MSM). The CODEC supports two differential microphone inputs, one differential earphone output, one single-ended earphone output, and a differential analog auxiliary interface.

The CODEC integrates the microphone and earphone amplifiers into the MSM6280 device, reducing the external component count to just a few passive components.

The microphone (Tx) audio path consists of a two-stage amplifier with the gain of the second stage set internally. The Rx/Tx paths are designed to meet the ITU-G.712 requirements for digital transmission systems.

### 3.8.13 Vocoder Subsystem

The MSM6280 device's QDSP4000 supports AMR, FR, EFR and HR. In addition, the QDSP4000 has modules to support the following audio functions: DTMF tone generation, DTMF tone detection, Tx/Rx volume controls, Tx/Rx automatic gain control (AGC), Rx Automatic Volume Control (AVC), EarSeal Echo Canceller (ESEC), Acoustic Echo Canceller (AEC), Noise Suppression (NS), and programmable, 13-tap, Type-I, FIR, Tx/Rx compensation filters. The MSM6280 device's integrated ARM9TDMI processor downloads the firmware into the QDSP4000 and configures QDSP4000 to support the desired functionality.

### 3.8.14 ARM Microprocessor subsystem

The MSM6280 device uses an embedded ARM926EJ-S microprocessor. This microprocessor, through the system software, controls most of the functionality for the MSM device, including control of the external peripherals such as the keypad, LCD, RAM, ROM, and EEPROM devices.

Through a generic single serial bus interface (SSBI) the ARM926EJ-S configures and controls the functionality of the RFR6275, RTR6285, and PM6658 devices.

## 3. TECHNICAL BRIEF

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### 3.8.15 Mode Select and JTAG Interfaces

The mode pins to the MSM6280 device determine the overall operating mode of the ASIC. The options under the control of the mode inputs are Native mode, which is the normal subscriber unit operation, ETM mode, which enables the built-in trace mode, and test mode for factory testing.

The MSM6280 device meets the intent of the ANSI/IEEE 1149.1A-1993 feature list. The JTAG interface can be used to test digital interconnects between devices within the mobile station during manufacture.

### 3.8.16 General-Purpose Input/Output Interface

The MSM6280 device has general-purpose bidirectional input/output pins. Some of the GPIO pins have alternate functions supported on them. The alternate functions include USB interface, additional RAM, ROM, general-purpose chip selects, parallel LCD interface, and a UART interface. The function of these pins is documented in the various software releases.

### 3.8.17 UART

The MSM6280 device employs three UARTs. UART1 has dedicated pins while UART2 and UART3 share multiplexed pins.

- UART1 for data
- UART2 (can be used for USIM interface)
- UART3 for data

### 3.8.18 USB

The MSM6280 device integrates a universal serial bus (USB) controller that supports both unidirectional and bidirectional transceiver interfaces. The USB controller acts as a USB peripheral communicating with the USB host.

### 3.9 Power Block

#### 3.9.1 General

MSM6280, included RF, is fully covered by PM6658(Qualcomm PMIC). PM6658 cover the power of MSM6280, MSM memory, RF block, Bluetooth, USIM and TCXO. Major power components are :

PM6658 : Phone power supply

BD6095 : LCD Backlight/Flash charge pump

#### 3.9.2 PM6658

The PM6658 device (Figure 1-1) integrates all wireless handset power management. The power management portion accepts power from all the most common sources - battery, external charger, adapter, coin cell back-up - and generates all the regulated voltages needed to power the appropriate handset electronics. It monitors and controls the power sources, detecting which sources are applied, verifying that they are within acceptable operational limits, and coordinates battery and coin cell recharging while maintaining the handset electronics supply voltages. Nineteen programmable output voltages using a Combination of 4 switched-mode power supplies and 15 low-dropout linear regulators, all derived from a common trimmed voltage reference.

A dedicated controller manages the TCXO warm-up and signal buffering, and key parameters under-voltage lockout and crystal oscillator signal presence) are monitored to protect against detrimental conditions.

MSM device controls and statuses the PM6658 IC using Single Serial Bus Interface (SSBI) supplemented by an Interrupt Manager for time-critical information. Another dedicated IC Interface circuit monitors multiple trigger events and controls the power-on sequence.

### 3. TECHNICAL BRIEF

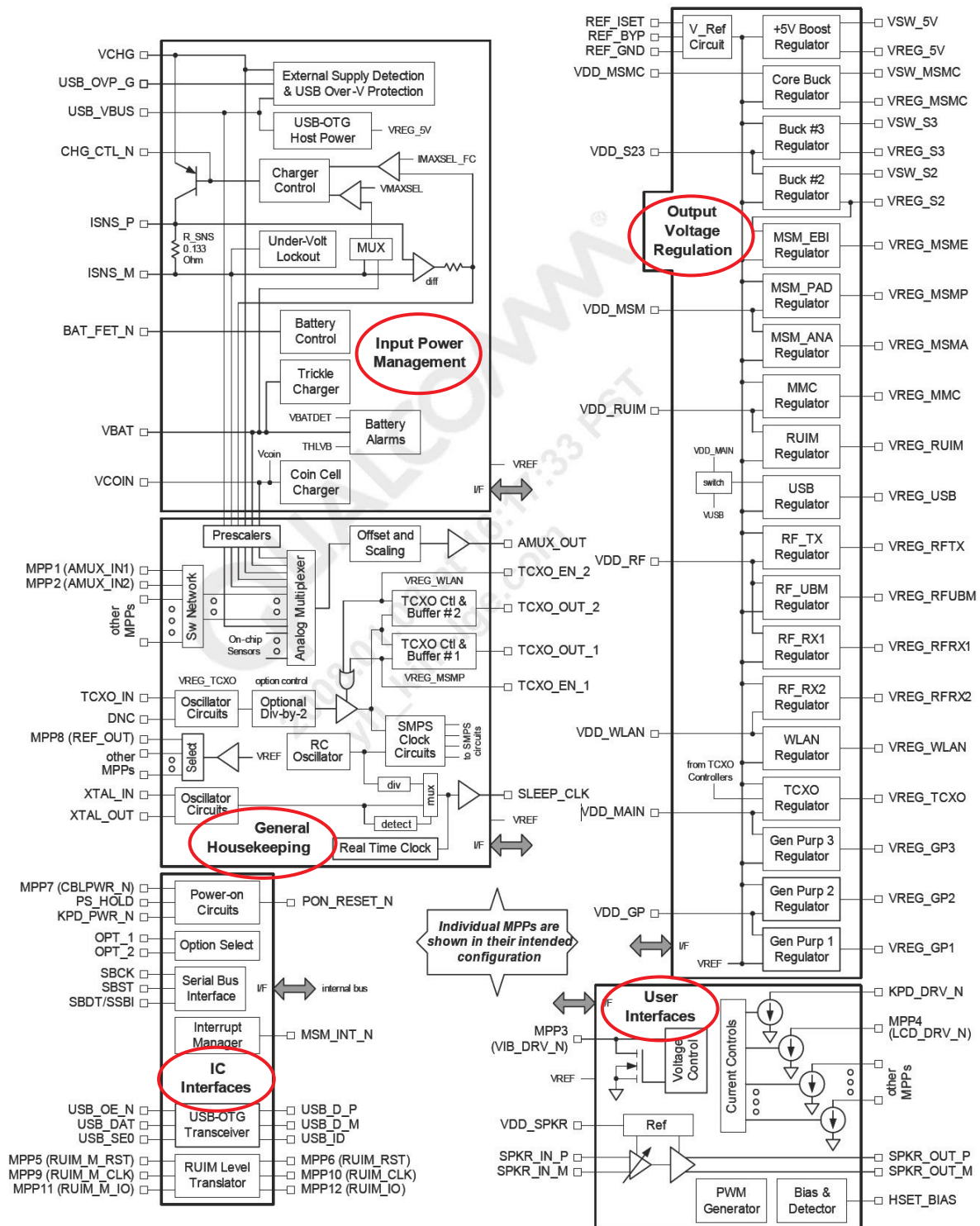


Figure. PM6658 Functional Block Diagram

### 3.9.3 Charging control

The PM6658 IC provides support circuitry for charging Li-ion batteries, utilizing as many as four MSM-enabled charging techniques: trickle, constant current, constant voltage, and pulse. Battery voltage, external supply voltage, and total detected current measurements are available to the MSM device through the analog multiplexer. This allows the MSM device to monitor charging parameters, make decisions, and control the charging process.

Charging of a severely depleted battery begins with trickle charging, a mode that limits the current and avoids pulling VDD down. Once a minimum battery voltage is established using trickle charging, constant current charging is enabled via the MSM device to charge the battery quickly - this mode is sometimes called fast charging. Once the Li-ion battery approaches its target voltage (through constant current charging), the charge is completed using either constant voltage or pulse charging. Further discussions of all charging modes are provided in the sections identified within.

### 3. TECHNICAL BRIEF

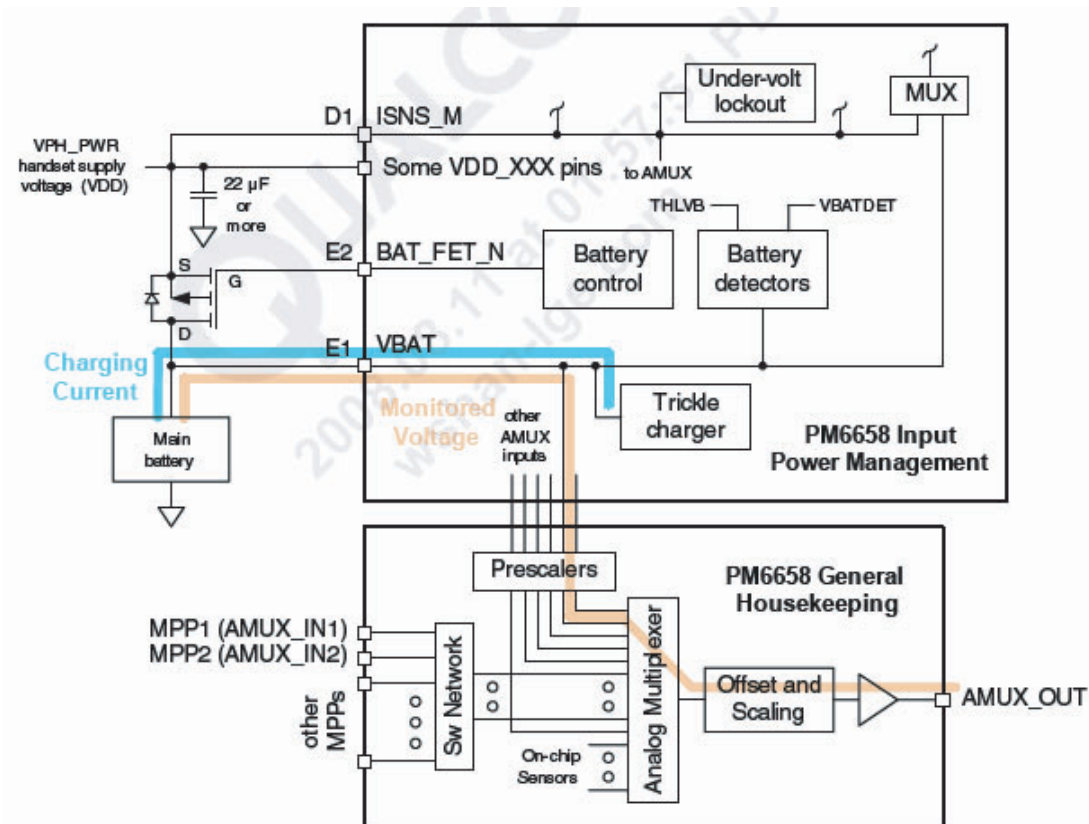
#### Trickle Charging

Trickle charging of the main battery, enabled through MSM control and powered from VDD, is provided by the PM6658 IC. This mode is used to raise a severely depleted battery's voltage to a level sufficient to begin fast charging.

Valid Setting : 0, 20, 30, 40, 50, 60, 70, 80mA

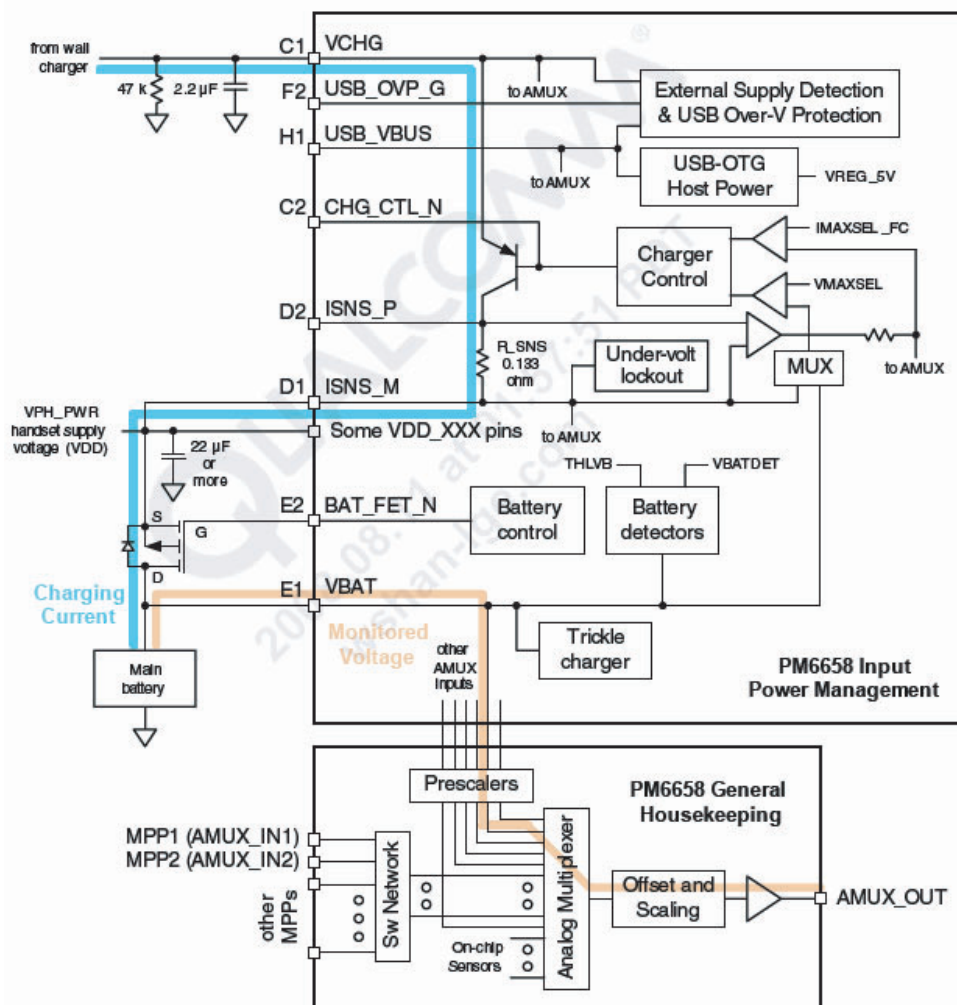
The trickle charger is an on-chip programmable current source that supplies current from VDD to pin E1 (VBAT). Trickle charging is enabled through MSM control and should be used until the main battery reaches its desired threshold, usually about 3.0 V for Li-ion batteries. The threshold varies with battery type and application, so there is no predefined value implemented in the detection circuits. Software must terminate trickle charging based on battery voltage measurements at the MSM HKADC (routed through the PMIC analog multiplexers) and the battery type - there is not a preset termination threshold.

The charging current path and voltage monitoring path are highlighted.



#### Constant Current Charging

The PM6658 IC supports constant current charging of the main battery by closing the battery MOSFET (connecting the battery to VDD), and closed-loop controlling the pass transistor. If current limiting is not implemented by the external supply, the closed-loop pass transistor control regulates the total current (handset electronics (plus charging current) to match the programmed value (IMAXSEL). The MSM device monitors the charging process as described earlier and continues the constant current mode until the battery reaches its target voltage. Charging of Li-ion batteries require further charging using constant voltage or pulse techniques.



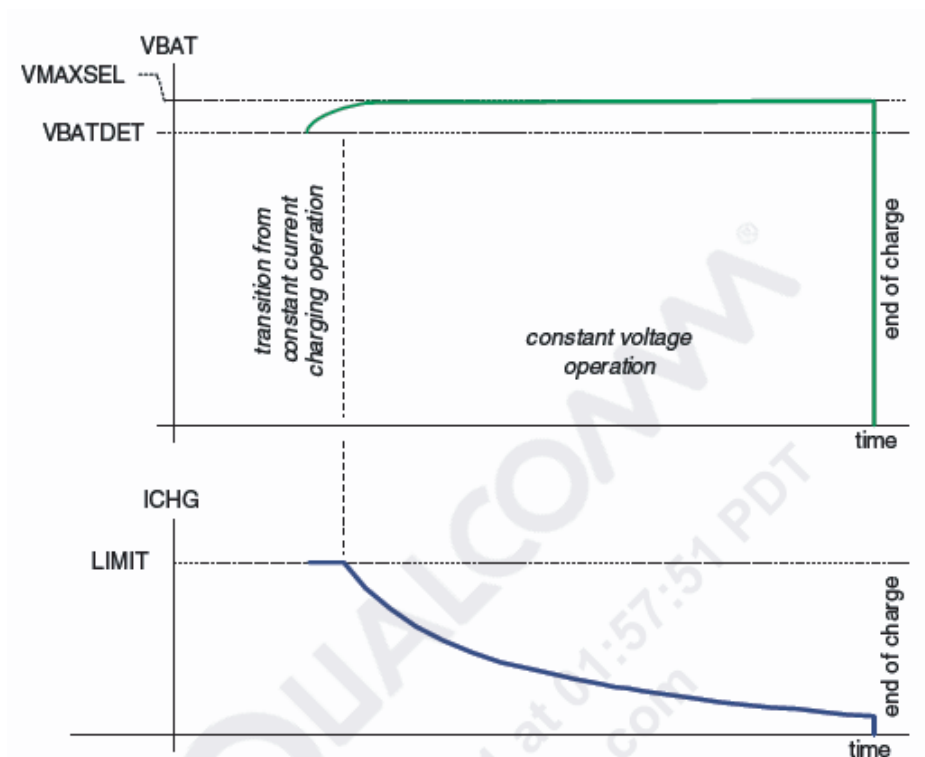


### 3. TECHNICAL BRIEF

#### Constant Voltage Charging

PM6658 IC support of main battery constant voltage charging is very similar to its constant current mode: the battery MOSFET is closed and the pass transistor is closed-loop controlled.

But in this case, the closed-loop control regulates the voltage at VBAT (pin E1) to match the programmed value (VMAXSEL). This ensures the most accurate final battery voltage<sup>®</sup>™ Li-ion battery manufacturers recommend a voltage accuracy of 1% or better at the end of charge. The battery voltage is constant (or nearly so) while the charging current decreases exponentially for the remaining charge process



### 3.10 External memory interface

The MSM6280 device was designed to provide two distinct memory interfaces. EBI1 was targeted for supporting high speed synchronous memory devices. EBI2 was targeted towards supporting slower asynchronous devices such as LCD, NAND flash, SRAM, etc.

In addition, MSM6280 provide SD bus interface. KC910 supports 512MByte free user memory using SD interface.

- EBI1 Features

- 16 bit static and dynamic memory interface
- 32 bit dynamic memory interface
- 24 bits of address for static memory devices which can support up to 32MBytes on each chip select
- Synchronous burst memories supported (burst NOR, burst PSRAM)
- Synchronous DRAM memories supported
- Byte addressable memory supporting 8 bit, 16 bit and 32 bit accesses
- Pseudo SRAM (PSRAM) memory support

- EBI2 Features

- Support for asynchronous FLASH and SRAM(16bit & 8bit).
- Interface support for byte addressable 16bit devices (UB\_N & LB\_N signals).
- 2Mbytes of memory per chip select.
- Support for 8 bit/16bit wide NAND flash.
- Support for parallel LCD interfaces, port mapped of memory mapped(18 or 16 bit).

- 2Gb NAND(16bit, Large Block ) flash memory + 1Gb SDRAM (32bit)

- 1-CS(Chip Select) are used.

- The SD bus allows the dynamic configuration of the number of data line from 1 to 4 Bidirectional data signal. After power up by default, the Device will use only DAT0. After initialization, host can change the bus width.

Interface Spec				
Device	Part Name	Maker	Read Access Time	Write Access Time
FLASH	TYA000B800COGG	Toshiba	50 ns	30 ns
SDRAM	TYA000B800COGG	Toshiba	15 ns	15 ns

**Table#1. External memory interface**

### 3. TECHNICAL BRIEF

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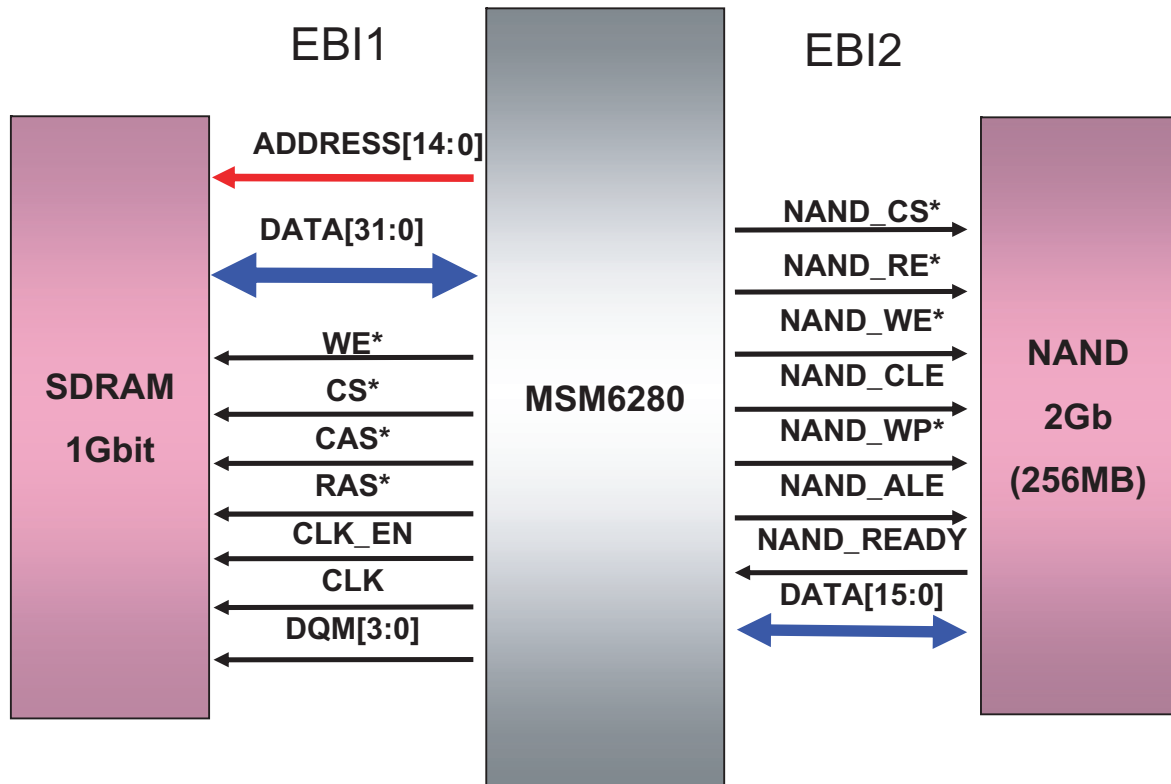


Figure. Simplified Block Diagram of Memory Interface

## 3.11 H/W Sub System

### 3.11.1 RF Interface

#### A. RTR6285(WCDMA\_Tx, GSM\_Tx/Rx)

MSM6280 controls RF part(RTR6285) using these signals.

- SBST : SSBI I/F signals for control Sub-chipset
- PA\_ON1 : Power AMP on RF part
- RX0\_I/Q\_M/P,TX\_I/Q\_M/P : I/Q for T/Rx of RF
- TX\_AGC\_ADJ : control the gain of the Tx signal prior to the power amplifier
- DAC\_REF : Reference input to the MSM Tx data DACs

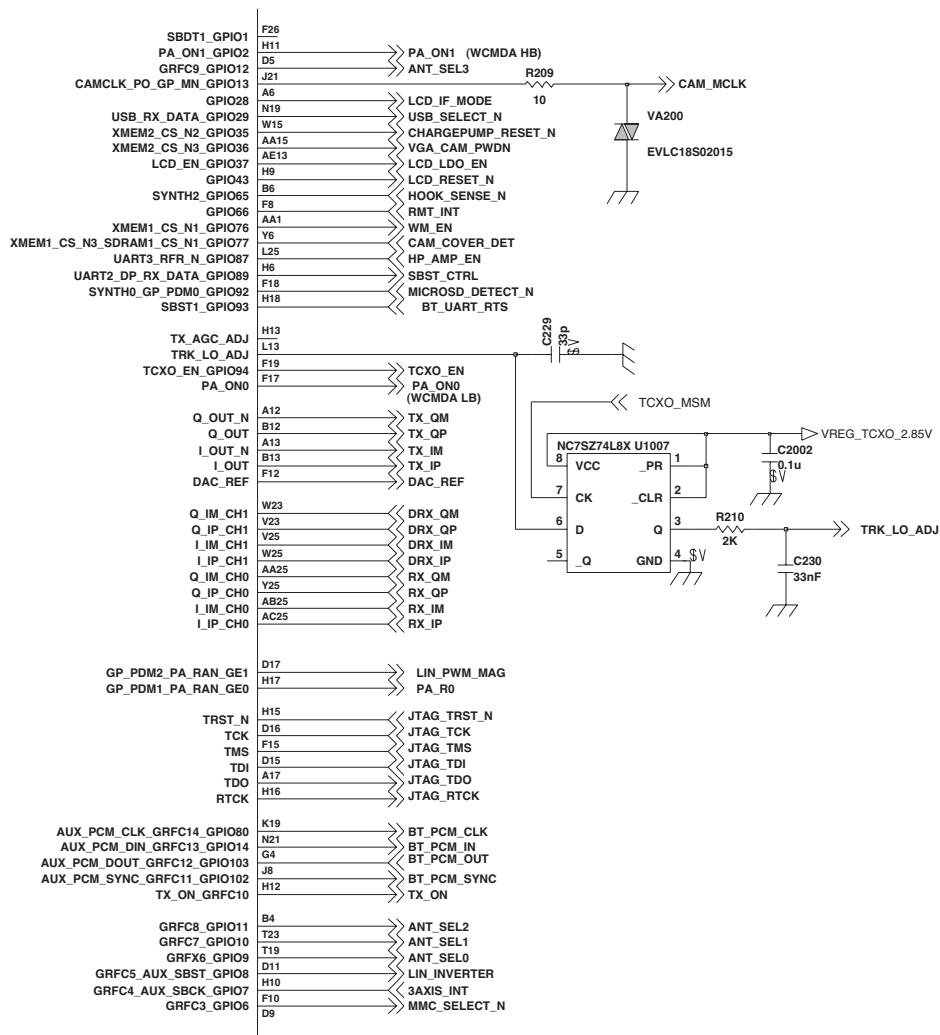


Figure. Schematic of RF Interface of MSM6280

### 3. TECHNICAL BRIEF

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#### B. the others

- TRK\_LO\_ADJ : TCXO(19.2M) Control
- PA\_ON : WCDMA(2100) TX Power Amp Enable
- ANT\_SEL[0-3] : Ant Switch Module Mode Selection(WCDMA,GSM Tx/Rx,DCS-PCS Tx/Rx)
- GSM\_PA\_BAND : GSM/DCS-PCS Band Selection of Power Amp
- GSM\_PA\_RAMP : Power Amp Gain Control of APC\_IC
- GSM\_PA\_EN : Power Amp Gain Control Enable of APC\_IC

#### 3.11.2 MSM Sub System

##### 3.11.2.1 USIM Interface

SIM interface scheme is shown in Figure.

And, there control signals are followed

- USIM\_CLK : USIM Clock
- USIM\_Reset : USIM Reset
- USIM\_Data : USIM Data T/Rx

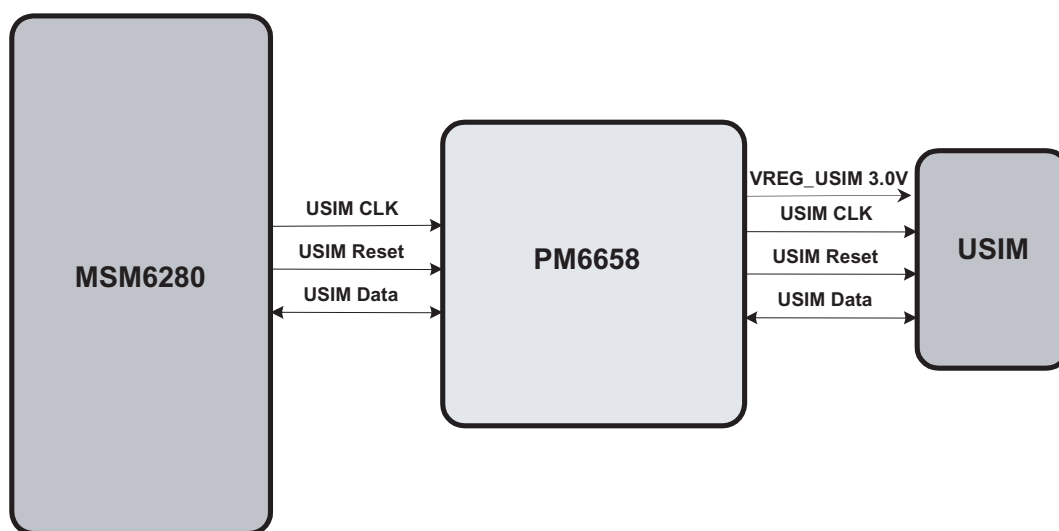


Figure. SIM Interface

### 3.11.2.2 UART Interface

UART signals are connected to MSM GPIO through IO connector with 115200 bps speed.

GPIO_Map	Name	Note
GPIO_96	UART_RXD	Data_Rx
GPIO_95	UART_TXD	Data_Tx

**Table. UART Interface**

### 3.11.2.3 USB

The MSM6280 device contains a Universal Serial Bus (USB) interface to provide an efficient interconnect between the mobile phone and a personal computer (PC). The USB interface of the MSM6280 was designed to comply with the definition of a peripheral as specified in USB Specification, Revision 1.1. Therefore, by definition, the USB interface is also compliant as a peripheral with the USB Specification, Revision 2.0.

The USB Specification Revision 1.1 defines two speeds of operation, namely low-speed (1.5 Mbps) and full-speed (12 Mbps), both of which are supported by the MSM6280.

Name	Note
USB_DAT	Data to/from MSM
USB_SE0	Data to/from MSM
USB_OE_N	Out-Put Enable of Transceiver
USB_VBUS	USB_Power From Host(PC)
USB_D+	USB Data+ to Host
USB_D-	USB Data- to Host

**Table. USB Signal Interface**

### 3. TECHNICAL BRIEF

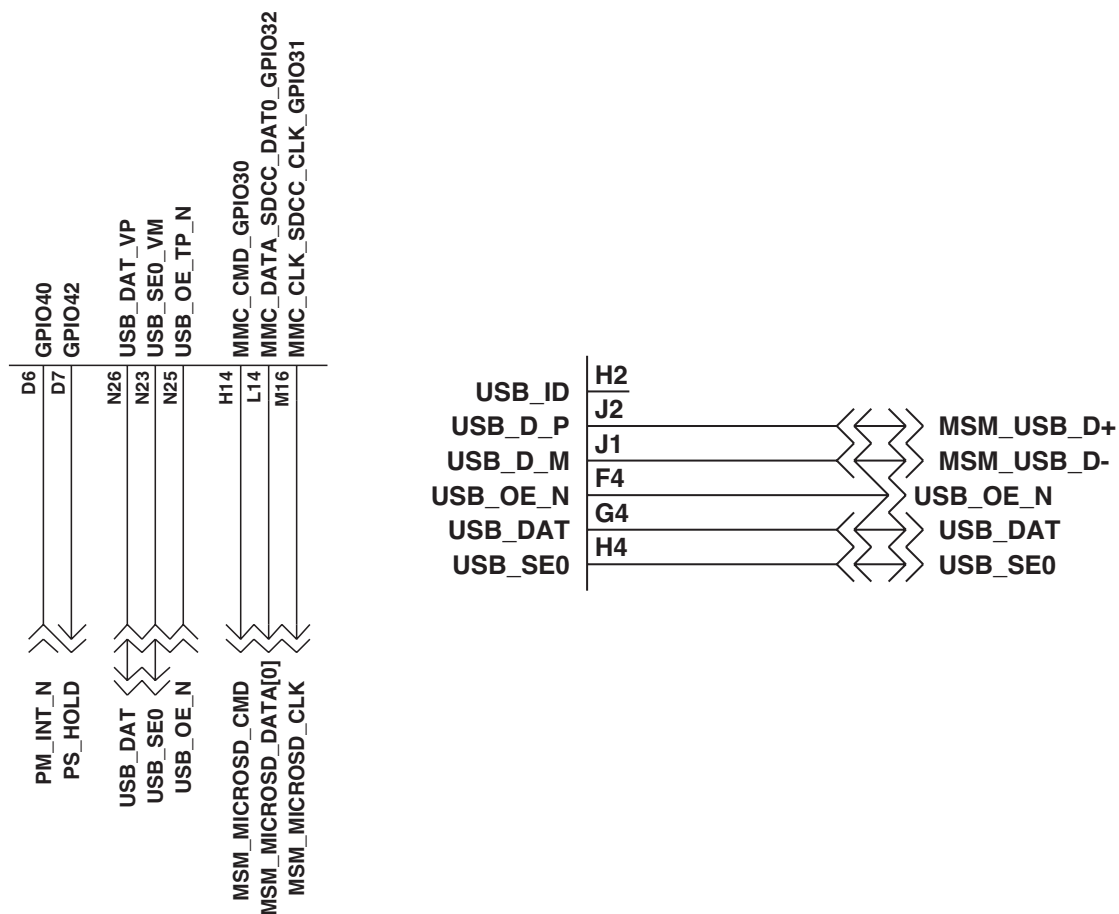


Figure. Schematic of USB block(MSM6280 Side & PM6658 Side)

### 3.11.3 HKADC(House Keeping ADC)

The MSM6280 device has an on-chip 8-bit analog-to-digital converter (HKADC) which is tended to digitize DC signals corresponding to analog parameters such as battery voltage, temperature, and RF power levels. The MSM6280 device has six analog input pins which are multiplexed to the input of the internal HKADC.

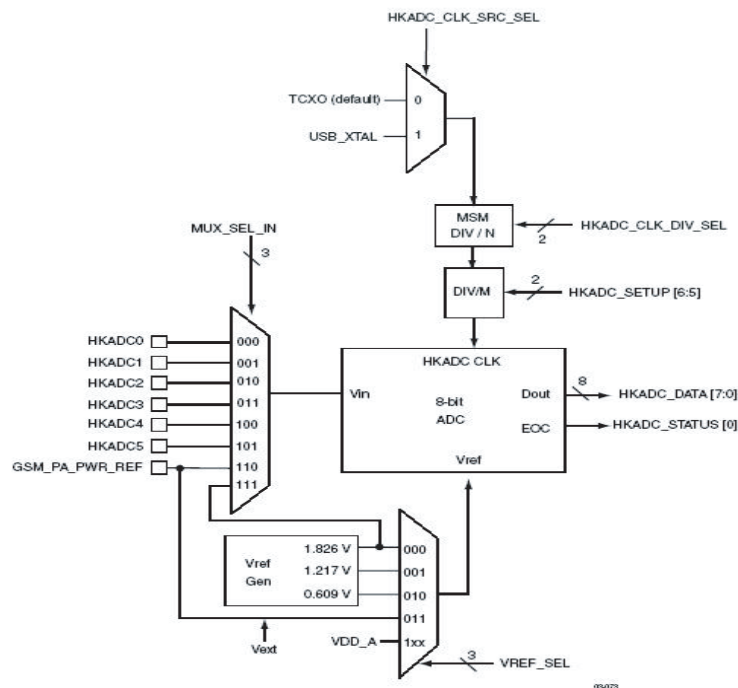


Figure. MSM6280HKADC Block diagram

Channel	Signal	Note
HKADC0	AMUX_OUT	RF PAM Temperature Check
HKADC1	VBATT_SENSE	Battery voltage level
HKADC2	N.C	N.C
HKADC3	RMT_ADC	Ear jack ADC
HKADC4	PCB_Rev_ADC	PCB Version Check
HKADC5	VBAT_TEMP	Battery Temperature Check

Table. HKADC channel table



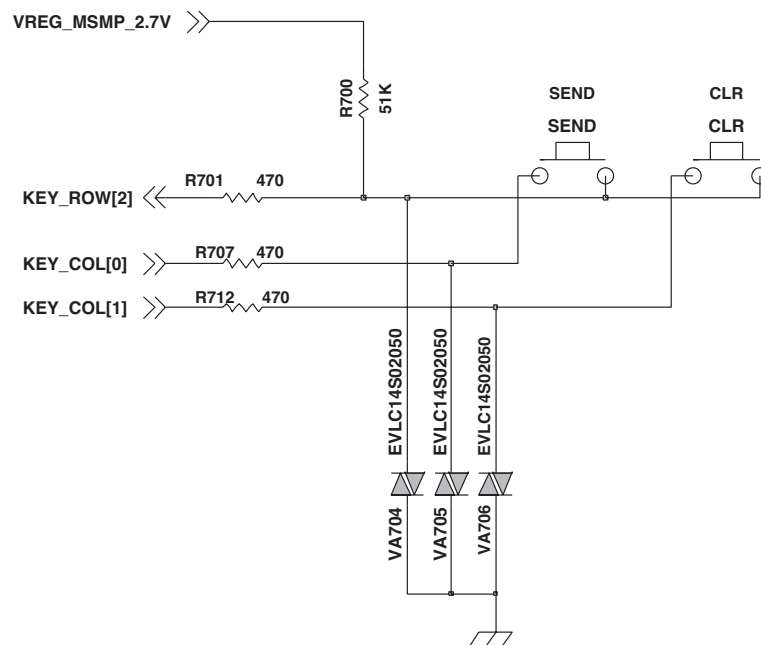
### 3. TECHNICAL BRIEF

#### 3.11.4 Key Pad

There are 5 key buttons. Shows the Key Matrix & Keypad circuit. 'END' Key is connected to PMIC(PM6658).

	COL(0)	COL(1)
ROW(0)	Lock	Capture
ROW(1)		AF
ROW(2)	SEND	CLR

Table. Key Matrix Mapping Table



#### SEND & CLR KEY

Figure. Main Keypad Circuit

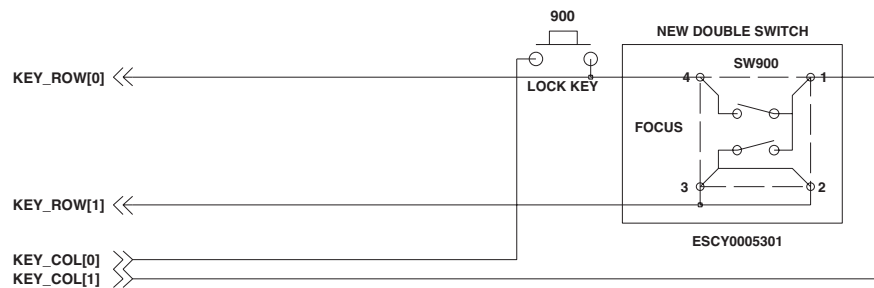
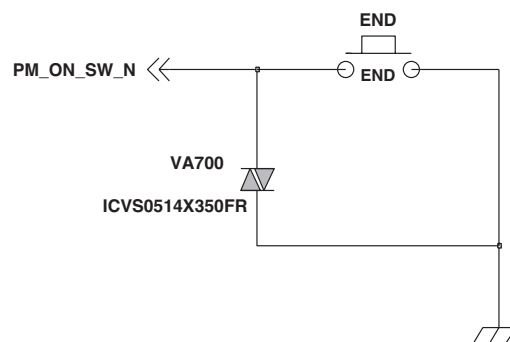


Figure. Side Keypad Circuit



## ON\_SW KEY

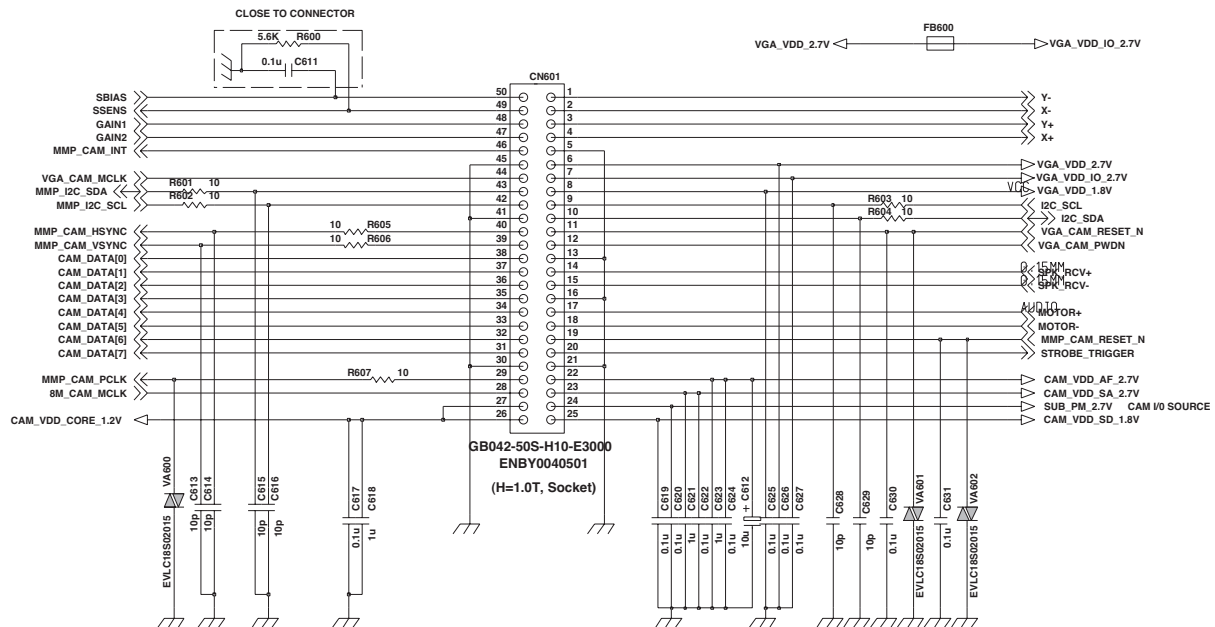
Figure. END Keypad Circuit

### 3. TECHNICAL BRIEF

#### 3.11.5 Camera Interface

KC910 Installed a 8M Pixel and 0.3Mega Camera.

Below figure shows the camera board to board connector and camera I/F signal.



#### 8M & VGA CONNECTOR

Figure. Camera PCB Board to Board Connector

### 3. TECHNICAL BRIEF

The MEGA Camera module is connected to Main PCB with 50pin Board to Board connector. Its interface is dedicated camera interface port in Multimedia chip. The camera port supply 13MHz master clock to camera module, vertical sync signal, horizontal sync signal, reset signal and 8bits data from camera module. The camera module is controlled by I2C port from Multimedia chip.

Pin No.	Symbol	I/O	State at reset	State at power save	State at power off	Description
1	GND_AF	-	-	-	-	Ground (Auto Focus)
2	GND	-	-	-	-	Ground
3	VDD_AF	-	-	-	-	Voltage Supply (Auto Focus)
4	SCL	I/O	Hi Z	Active	Hi Z	I2C Serial Bus Clock *1
5	SDA	I/O	Hi Z	Active	Hi Z	I2C Serial Bus Data I/O *1
6	NC	-	-	-	-	
7	VDD_SA	-	-	-	-	Voltage Supply (Sensor Analog)
8	VS	O	Hi Z	Hi Z	Hi Z	Vertical Synchronization Signal
9	GND	-	-	-	-	Ground
10	HS	O	Hi Z	Hi Z	Hi Z	Horizontal Synchronization Signal
11	VDD_IO	-	-	-	-	Voltage Supply(I/O and DSP Digital)
12	XRST	I	-	-	-	System Reset
13	TRIG	O	Low	Low	Hi Z	Interrupt Line Signal
14	STRB	O	Low	Low	Hi Z	LED/Xenon Strobe trigger
15	D7	O	Hi Z	Hi Z	Hi Z	Digital Video Data (MSB)
16	D6	O	Hi Z	Hi Z	Hi Z	Digital Video Data
17	D5	O	Hi Z	Hi Z	Hi Z	Digital Video Data
18	D4	O	Hi Z	Hi Z	Hi Z	Digital Video Data
19	D3	O	Hi Z	Hi Z	Hi Z	Digital Video Data
20	D2	O	Hi Z	Hi Z	Hi Z	Digital Video Data
21	D1	O	Hi Z	Hi Z	Hi Z	Digital Video Data
22	D0	O	Hi Z	Hi Z	Hi Z	Digital Video Data (LSB)
23	GND	-	-	-	-	Ground
24	MCK	I	-	-	-	System Clock Input
25	VDD_SD	-	-	-	-	Voltage Supply (Sensor Digital)
26	GND	-	-	-	-	Ground
27	DCK	O	Hi Z	Hi Z	Hi Z	Digital Video Data Clock
28	GND	-	-	-	-	Ground
29	VDD_L	-	-	-	-	Voltage Supply (DSP Core)
30	VDD_L	-	-	-	-	Voltage Supply (DSP Core)

**Table. Interface between MEGA Camera Module and MAIN PCB (in camera module)**

### 3. TECHNICAL BRIEF

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The VGA Camera module is connected to FPCB with 20pin Board to Board connector. Its interface is dedicated camera interface port in MSM6280. The camera port supply 13.5MHz master clock to camera module and receive 13.5MHz pixel clock (15fps), vertical sync signal, horizontal sync signal, reset signal and 8bits data from camera module. The camera module is controlled by I2C port from MSM6280.

No	Name	Type	Description
1	DVDD	P	Digital power(1.8V normal)
2	MCLK	I	Master clock input
3	GND	G	Ground
4	PCLK	O	Pixel clock output
5	D0	O	Parallel pixel data0
6	D1	O	Parallel pixel data1
7	D2	O	Parallel pixel data2
8	D3	O	Parallel pixel data3
9	D4	O	Parallel pixel data4
10	D5	O	Parallel pixel data5
11	D6	O	Parallel pixel data6
12	D7	O	Parallel pixel data7
13	VSYNC	O	Vertical sync output
14	HSYNC	O	Horizontal sync output
15	STANDBY	I	Power sleep (Active “H”)
16	SDA	O	Serial interface data
17	SCL	O	Serial interface clock
18	RESET	I	Reset input (Active “L”)
19	IOVDD	P	I/O Power(1.8V or 2.8V)
20	AVDD	P	Analog Power(2.8V)

**Table. Interface between VGA Camera Module and FPCB (in camera module)**

### 3.11.9 LCD Module (LS030B3UX01 : SHARP)

- The IM220DBN2A model is a Color TFT Main supplied by SHARP.

This LCD Module has a 3.0 inch diagonally measured active display area with 240(RGB)X400 resolution. each pixel is divided into Red, Green and Blue sub-pixels and dots which are arranged in vertical stripes.

#### \* Features

- Display mode(Main LCD) : Normally Black, Transmissive VA mode 265K colors
- LCD Driver IC: LS030B3UX01(Magnachip)
- Driving Method : A-Si TFT Active Matrix
- 16 bit CPU interface Parallel

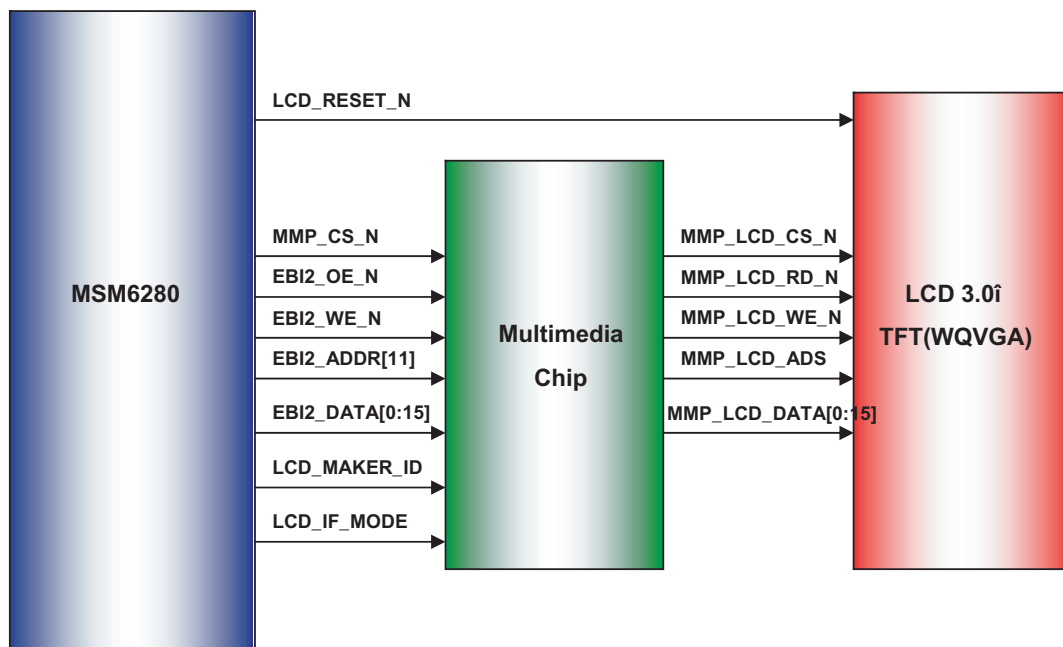


Figure. LCD Module Block Diagram

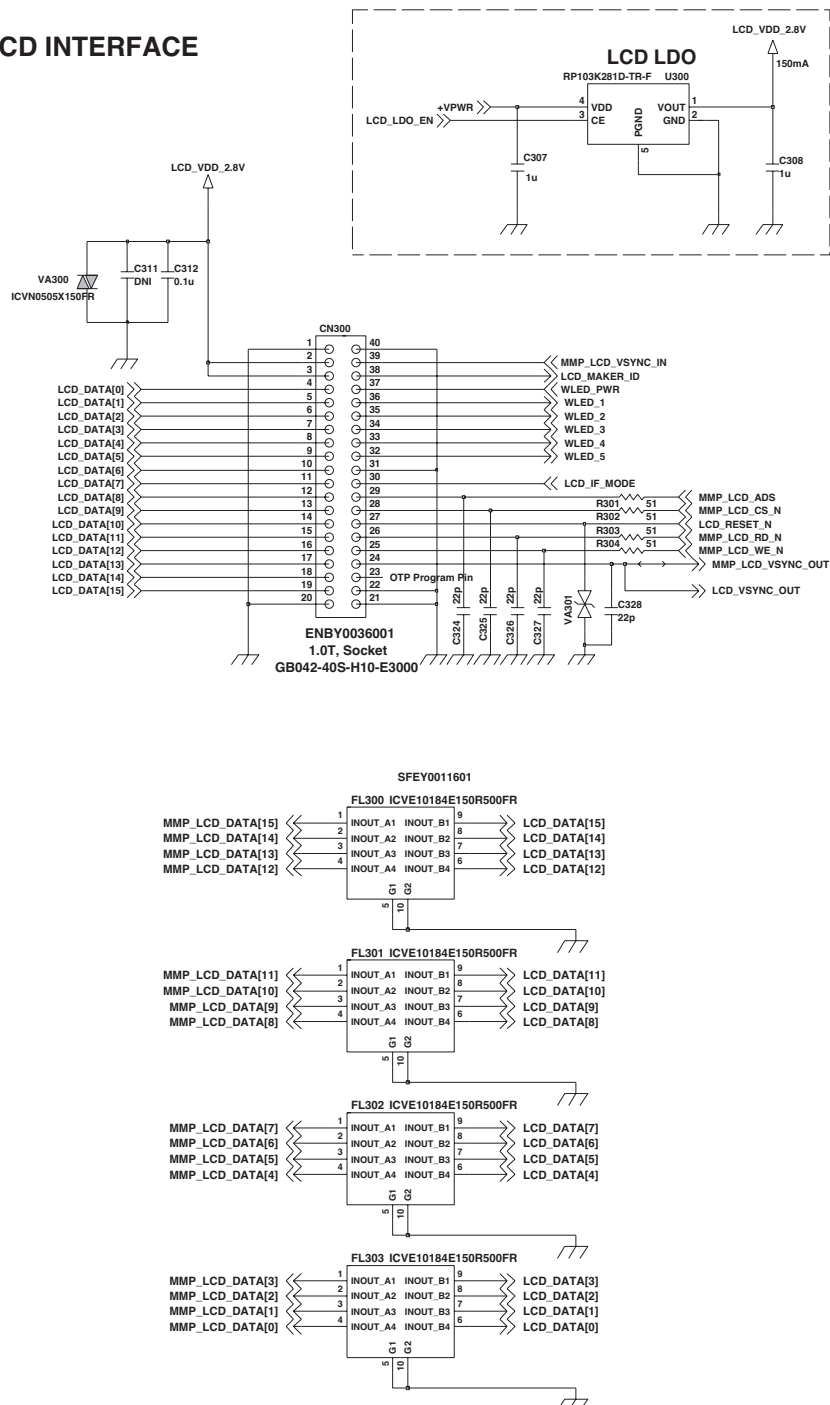
### 3. TECHNICAL BRIEF

#### 3.11.10 Display

LCD module is connected to Main PCB with 40 pin B TO B connector

The LCD module is controlled by 16-bit EBI2 in MSM6280 via Multimedia Chip.

##### LCD INTERFACE



### 3.11.10.1 Audio Signal Processing & Interface

Audio signal processing is divided uplink path and downlink path.

The uplink path amplifies the audio signal from MIC and converts this analog signal to digital signal and then transmits it to DBB Chip (MSM6280).

This transmitted signal is reformed to fit in GSM & WCDMA frame format and delivered to RF Chipset. The downlink path amplifies the signal from DBB chip (MSM6280) and outputs it to receiver (or speaker).

The receive path can be directed to either one of two earphone amplifiers or the auxiliary output.

The outputs earphone1 (EAR1OP, EAR1ON) and auxiliary out (LINE\_OP, LINE\_ON) are differential outputs. Earphone2 (HPH\_L, HPH\_R) is a single-ended output stage designed to drive a headset speaker.

The microphone interface consists of two differential microphone inputs, one differential auxiliary input and a two-stage audio amplifier.

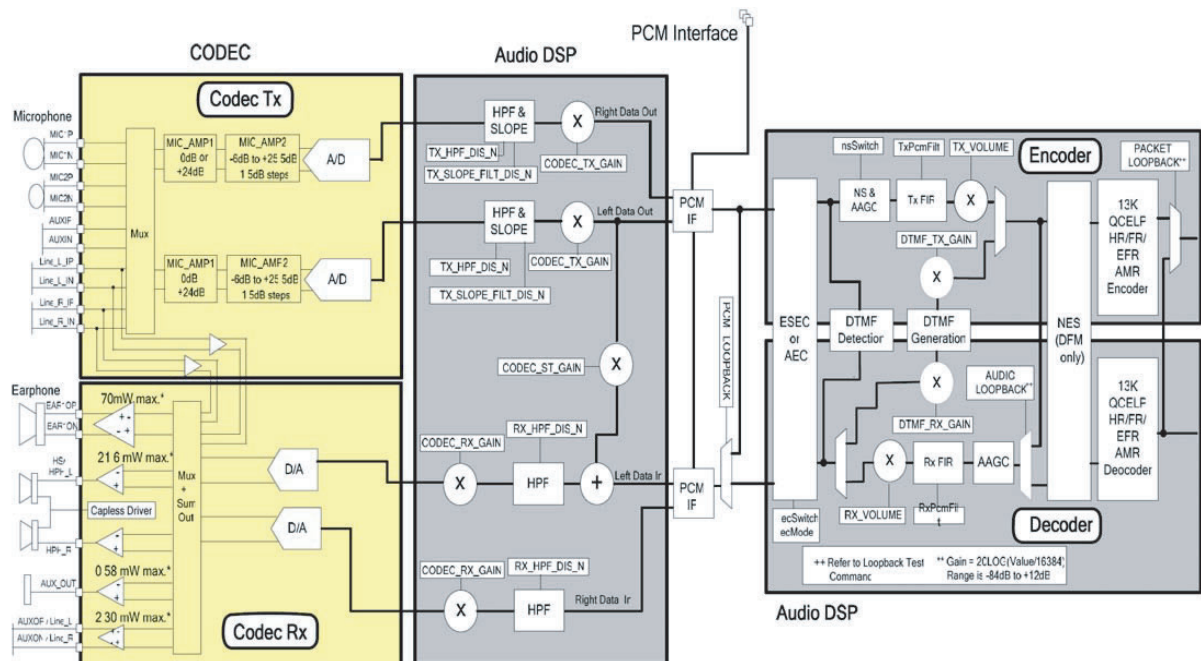


Figure. Audio Interface Detailed Diagram(MSM6280)



### 3. TECHNICAL BRIEF

#### MSM6280 Audio CODEC pins

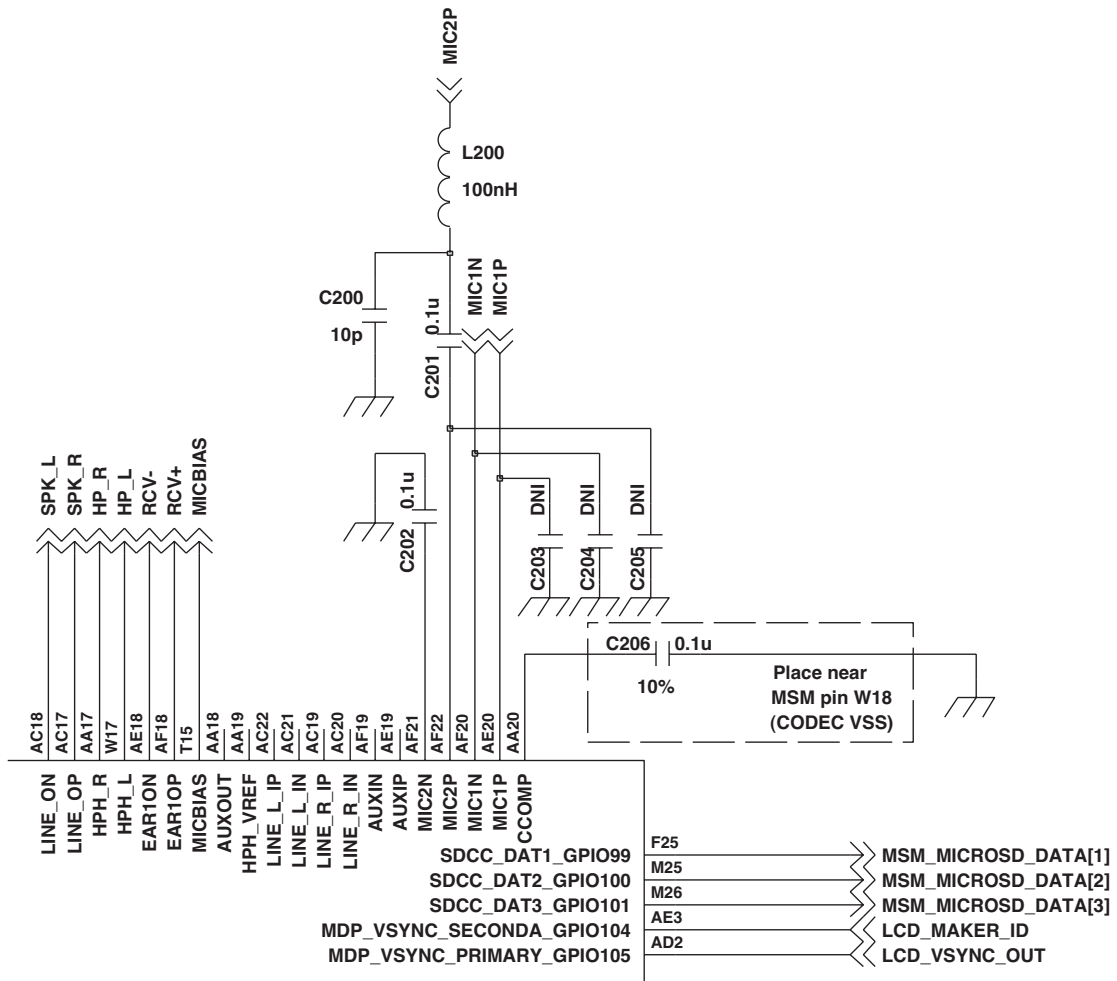
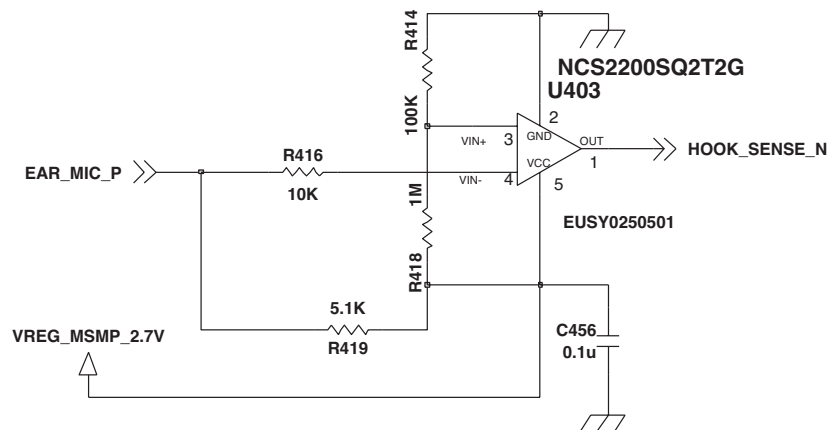
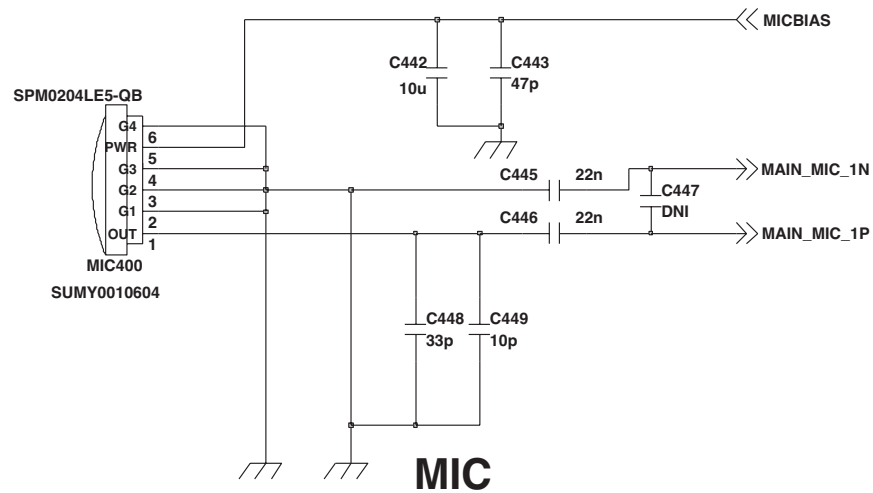


Figure . Audio part schematics

### 3. TECHNICAL BRIEF

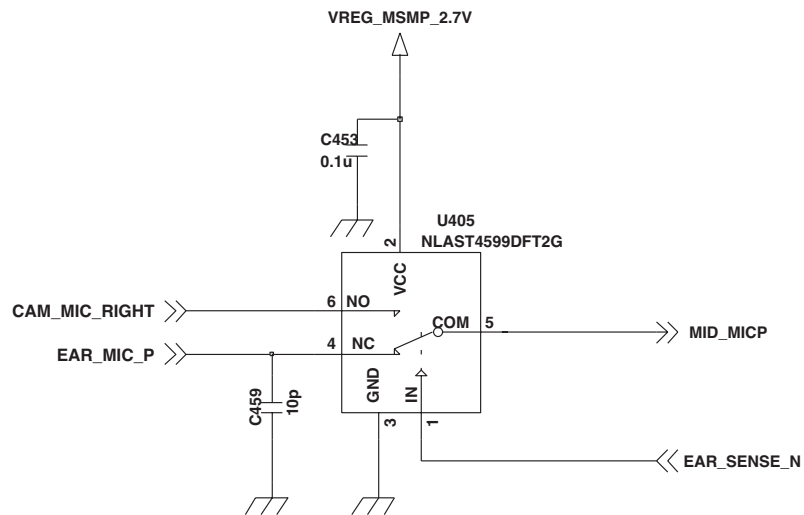
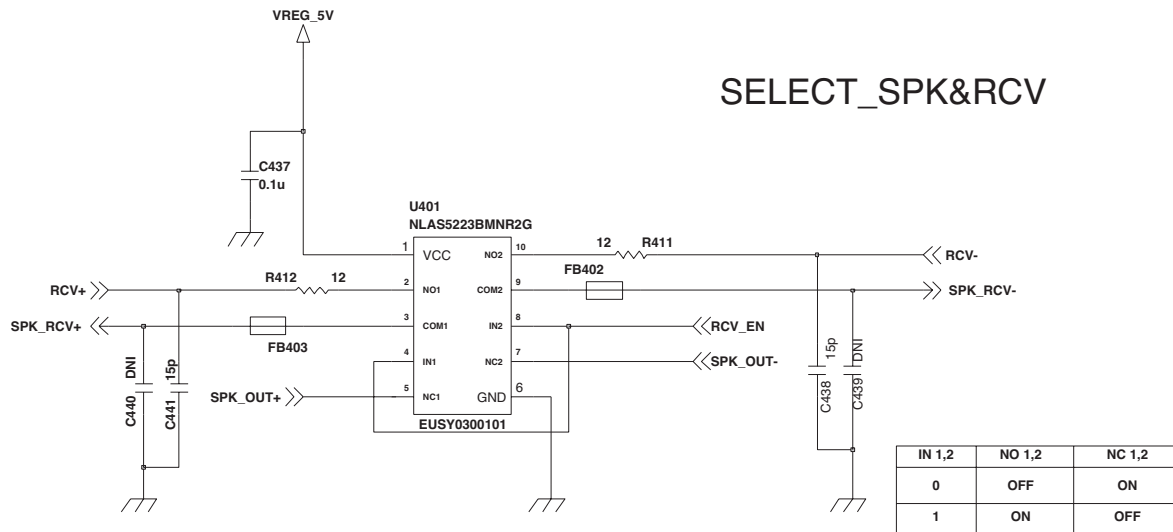


## HOOK SENSE

Figure . Audio part schematics

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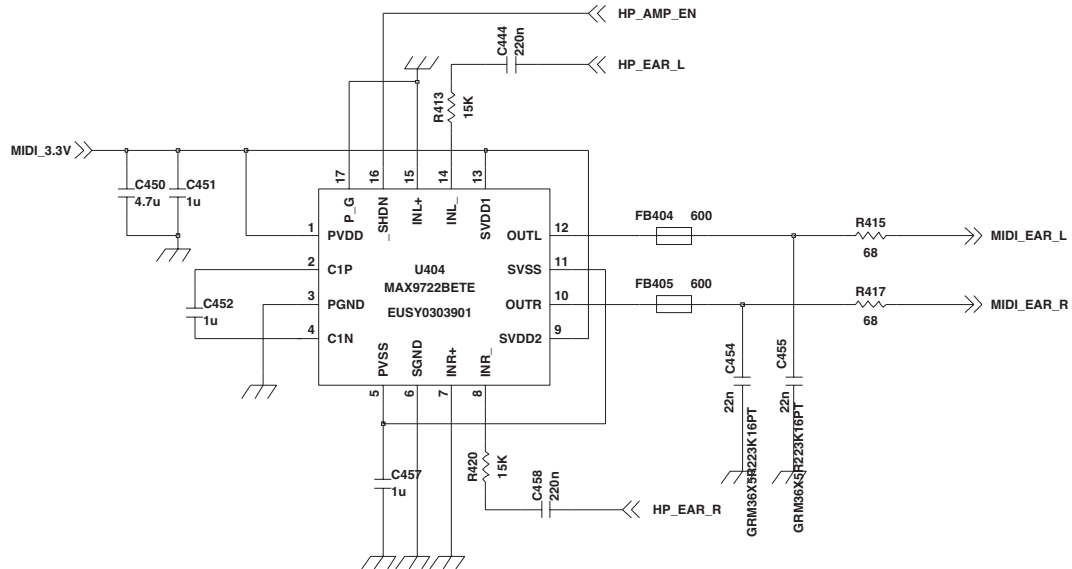
### 3. TECHNICAL BRIEF



### CAM / HP MIC SEL

Figure . Audio part schematics

### 3. TECHNICAL BRIEF



### HEADPHONE AMP

Figure . Audio part schematics

### 3.11.11.2 Audio Mode

There are four audio modes (Voice call, speaker phone, MIDI/MP3, Bluetooth Headset).

MODE	Device	Description
Voice Call	Receiver Mode	Receiver Voice Call
	Loud Mode	Speaker Phone
	Headset	Headset Voice Call
Speaker phone	Loud Mode	Speaker Phone
MIDI	Loud Mode	Speaker MIDI Bell
	Headset	Headset MIDI Bell
MP3	Loud Mode	Speaker MP3
	Headset	Headset MP3
Bluetooth	Voice	Voice Call
	Headset	Headset MIDI Bell/ MP3

**Table. Audio Mode**

### 3. TECHNICAL BRIEF

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#### Audio & Sound Main Component

There are 9 main components in KC910

	Component	Maker Part No.	Note
1	MSM6280	MSM6280	Base-Band Modem
2	Audio Codec	WM8990	ADC/DAC, AB class SPK AMP
3	Analog Switch	NLAS5223BMNR2G	Analog Switch for selecting SPK or RCV
4	Analog Switch	NLAST4599DFT2G	Analog Switch for CAM/ Ear Mic selection
5	Audio AMP	MAX9722BETE	Stereo Headset Amplifier 130mW
6	Speaker/ Receiver	EME2012TVC1T	8 ohm Speaker/ Receiver
7	Main MIC	SPM0204LE5-QB	-42 dB microphone
8	CAM MIC	SPU0409HE5H-PB	-42 dB microphone
9	Ear MIC	HC-MQD-LG059	Ear MIC

**Table. Audio main component list**

### # Multimedia Chip

#### 3.12 Feature List

##### 3.12.1 IC Characteristics

- MCP with Internal SDRAM, no need for external memory.
- Package: 180-pin TFBGA (8 x 8 mm)
- 90nm process
- Core voltage - 1.0 V
- IO voltage - Eleven strips, separate voltage between 1.8 and 3.3 V

##### 3.12.2 Multimedia Performance

- Digital Still Camera support with ISP on chip up to 5M pixel.
  - ☐ Photo-album and photo-editing capabilities.
  - ☐ Superior quality, (e.g. including lens shading).
  - ☐ Camera controls for flash, optical zoom, focus, shutter and iris.
- Camcorder operation as a DivX recorder /player at 30 fps CIF, VGA resolution. AVI file format with MP3 audio.
- Player for general DivX content, up to 30 fps CIF resolution. MP3 or WMA audio.
- 3GPP MMS compliant video clip recorder, supporting CIF/QCIF H.263, MPEG4 recording with AMR voice or AAC audio.
- Player for 3GPP MMS / streaming video clips, up to 30 fps CIF H.263, MPEG4, and H.264 with AMR voice or AAC/Enhanced AACPlus audio.
- 3GPP-compliant videophone, with H.263 or MPEG4 video at QCIF 15 fps (full-duplex).
- MIDI player (for ring tones, melodies).  
Compliant with 3GPP standards, including support for Mobile XMF for melodies with custom instruments.
- Audio stereo recorder player MP3/WMA
- ID3 tags display
- Spectral bars
- Lyrics display
- Equalizer
- 3D Surround Audio



## 3. TECHNICAL BRIEF

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### 3.12.3 DRM

- MDTV Conditional access compliant to JSR-177 (AES and TDES)
- Key exchange support
- True RNG (Random Number Generator)

### 3.12.4 3D Graphics

- 3D hardware + software accelerator targeting VGA 30 fps games with PlayStation<sup>®</sup>-1 enhanced quality.
  - ☐ Setup and viewport transforms
  - ☐ Bilinear and Trilinear texturing
  - ☐ Multi-texturing
  - ☐ Flat and Gourard shading
  - ☐ 24-bit ARGB support
  - ☐ Compressed textures (2 bits/texel)
  - ☐ Mipmapping
  - ☐ Full scene anti-aliasing (x4 / x16)
  - ☐ 16-bit Z-buffer
  - ☐ 4-bit stencil buffer
  - ☐ Fog
  - ☐ Alpha blending
  - ☐ Dot3 bump mapping
- Fill rate: 120M pixels/sec
- Polygon rate 0.8M triangles/sec

### 3.12.5 Image Sensor

- 10/12/14/16-bit RGB - Bayer Grid
  - ☐ CMOS up to 5MP
  - ☐ CCD up to 5MP
  - ☐ Pixel clock - Up to 90 MHz.
  - ☐ Active pixel rate - up to 75M pixels/sec:
    - ☐ 15fps @ 5MP
    - ☐ 25fps @ 3MP
    - ☐ 30fps @ 2MP
  - ☐ Black-level evaluation and correction
  - ☐ Defective pixel correction
  - ☐ Auto exposure and White-balance
  - ☐ Edge enhancement and auto focus.
  - ☐ Lens shading correction
  - ☐ Polyphase image scaling.
  - ☐ Digital zoom up to X4 in 16 steps
  - ☐ 8/16-bit YCbCr - 4:2:2
  - ☐ Input streaming bus - as CCIR601
  - ☐ Progressive (CMOS/CCD sensors) or interlaced (PAL/NTSC decoders) mode
  - ☐ Pixel clock - Up to 120 MHz (8-bit), 60Mhz (16-bit)
  - ☐ Input resolution - Up to 5M pixels
  - ☐ Auto focus
  - ☐ Polyphase image scaling
  - ☐ Digital zoom up to X4 in 16 steps

## 3. TECHNICAL BRIEF

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### 3.12.6 LCD Port

- Output resolution - up to VGA
- Supports dual-panels (two LCDs)
- Bypass from Host port to LCD CPU bus
- Up to 18-bit color depth (262K colors)
- CPU bus 8/9/16/18 bit compliant to all known vendors.
- RGB bus 3/6/18 bit up to 30Mhz clock

### 3.12.7 TV-out Port

- Composite analog interface
  - ☐ NTSC-M
  - ☐ PAL-B,D,G,H,I

### 3.12.8 Video and Graphics Postprocessing

- Handles Video (YUV) and Graphic (RGB)
- Video de-blocking
- Blending of video and graphics - up to 256 levels of blending
- Resizing (upscale and downscale) using quality polyphase filter
- Rotation and flip - 90, 180 and 270 degrees
- Picture brightness, contrast, and saturation control
- Display gamma adjustment
- Color space reduction

### 3.12.9 Serial Audio Ports

- ZR3453X has two audio/voice ports: one port is used for host bypass connection, and another for connecting to a codec or to a Bluetooth voice port.
  - ☐ PCM master/slave
  - ☐ I2S master/slave (5 lines including clock)
  - ☐ AC'97 master (5 lines including AC-Link reset)
  - ☐ Audio output master clock (I2S), up to 48 MHz
  - ☐ Supports sample rates of 8, 11.025, 16, 22.05, 24, 32, 44.1 or 48 kHz

### 3.12.10 Serial Data Ports

- I2C Multiple device support 100 and 400 kHz
- UART with flow control up to 3Mb/sec
- SPI port with Bit clock up to 40 MHz
  - ☐ (Motorola, National microwire, TI synchronous serial interface )

### 3.12.11 Mass Storage

- High-speed SD/MMC I/F
- NAND-flash storage
- SPI-flash
- CE-ATA HDD.
- SDIO peripherals

### 3.12.12 USB

- USB 2.0 High speed/full speed
- USB On The Go
- USB applications:
  - ☐ USB mass storage
  - ☐ PictBridge
  - ☐ Webcam

### 3.12.13 Host Port

- Two flavors:
  - ☐ Generic interface 8/16-bit Intel style.  
Connects as memory map (4-bit address)
  - ☐ LCD like 8/9/16 bit multiplexed bus.  
Connects as an LCD (1-bit address)
- Bypass mode - From Host port up to two LCDs, audio codec and other peripherals
- Support for messaging and data transfers (DMA)

## 3. TECHNICAL BRIEF

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### 3.12.14 Clocks

- Main clock input frequency, 10 to 31 MHz:
  - ☐ Directly from system PMU main clock and bypass its control
  - ☐ Embedded crystal oscillator (12Mhz)
  - ☐ Optional GPS TCXO
- Four configurable clock-out pins to drive external components: e.g. Audio codec, Sensor, PWM)

### 3.12.15 Boot

- Host boot
- Standalone boot

### 3.12.16 Debug

- JTAG for code debug
- UART for fast system ramp up

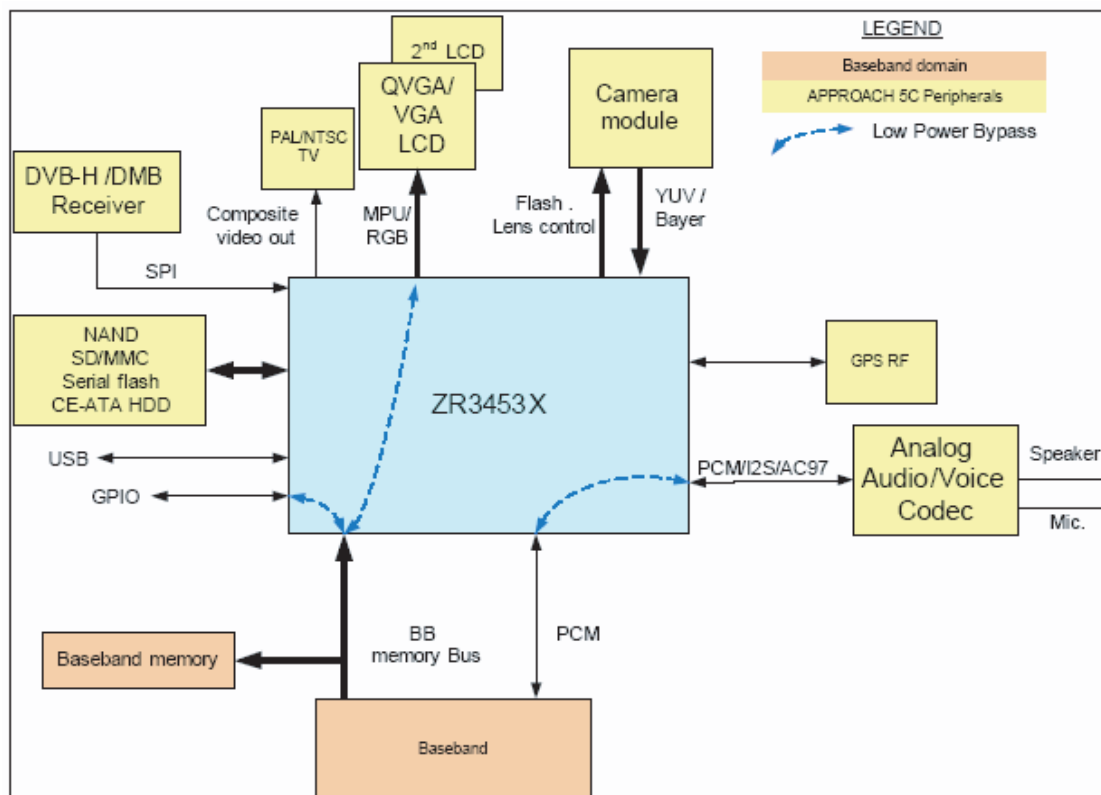
### 3.12.17 Power

- Very low power consumption, smaller than 150mW for all intense multimedia applications.
- Low power sleep mode 100  $\mu$ W
  - ☐ Host can control display audio and peripherals via bypass
- Light sleep mode 500  $\mu$ W
  - ☐ Specifically for GPS accurate off-line tracking

### 3. TECHNICAL BRIEF

Figure 1-1 presents a typical multimedia cellular phone system where ZR345X is used as a co-processor. In this system, ZR345X is connected to the following devices:

- Baseband chip (the host)
- CCD/CMOS Image Sensor for capturing video and still
- LCD panel(s) for displaying video
- Audio CODEC (A2D, D2A) for capturing voice and playing voice/music
- Media Flash (SmartMedia, NANDFlash, MMC or SD) to store media data (two active I/F, e.g. one NAND and one SD)
- Connector to TV



[ Figure 1-1 ]

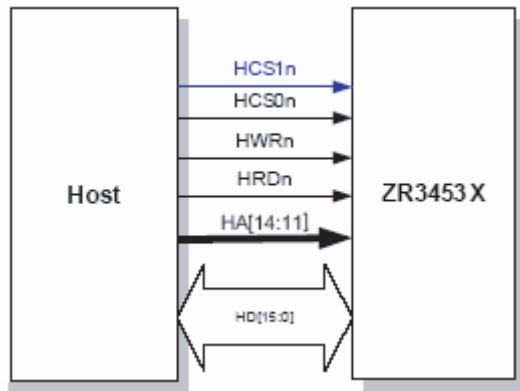
### 3. TECHNICAL BRIEF

## 3.13 Multimedia Chip Interface

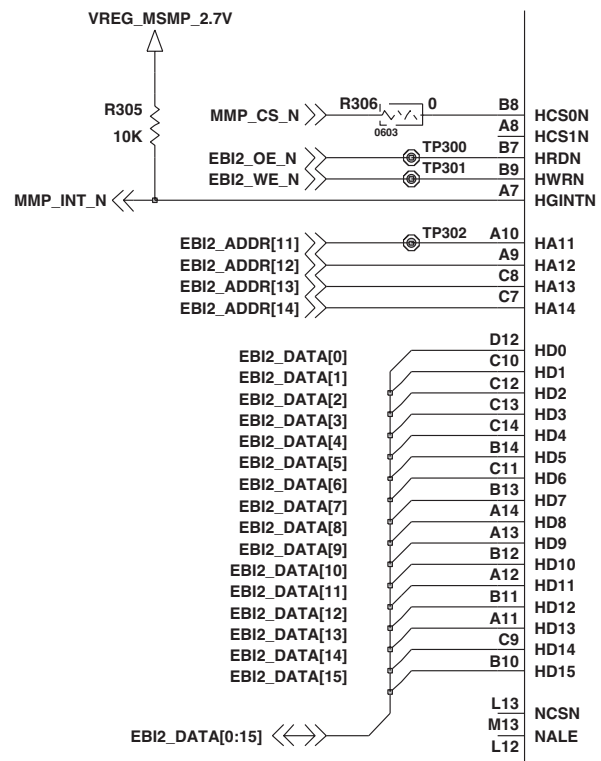
### 3.13.1 Host Interface

The HOST interface connects the ZR345X and the host processor (a handset baseband chip) in two optional modes:

- On the host memory bus.
- On the host LCD bus.



[ Block Diagram ]



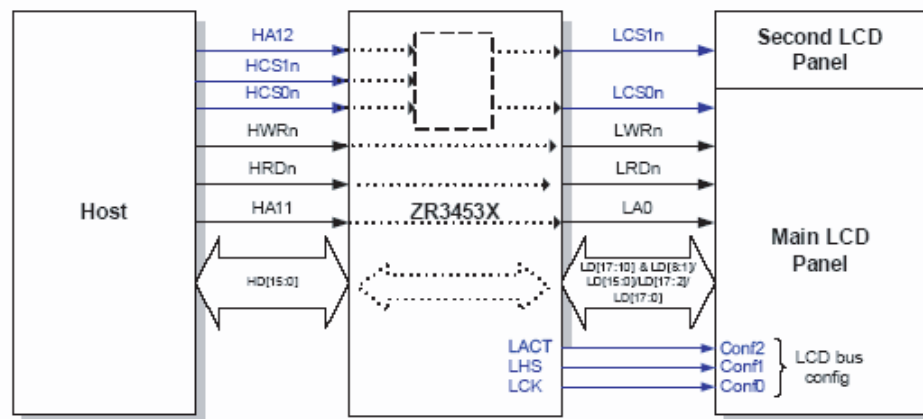
[ Schematics ]

### 3.13.2 Host - LCD - Bypass mode

The Host-LCD Bypass bypasses the host interface pins to the LCD pins.

This means that the bus transactions performed by the host are transferred to the LCD pins, enabling the host to have full control over one or two LCD panels, even when the ZR345X is in sleep mode.

This is the default mode.



### 3.13.3 Camera interface

ZR3454X connects with the CCD or CMOS Image Sensor (CIS) via its image sensor port.

ZR3454X supports several system configurations:

- CCD bayer 10,12,14,16 bit (ZR34532 only)
- CMOS bayer 10,12,14,16 bit
- YCbCr 8 bit
- YCbCr 8 bit with pixel valid
- YCbCr 16 bit

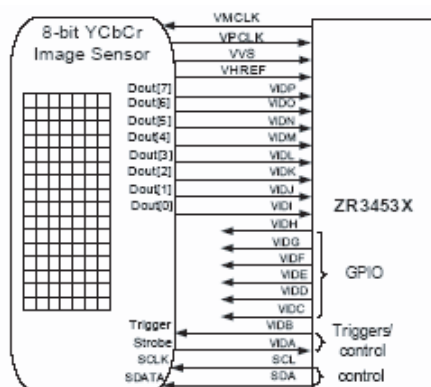


Table 3-11: Input Resolutions for Supported Applications

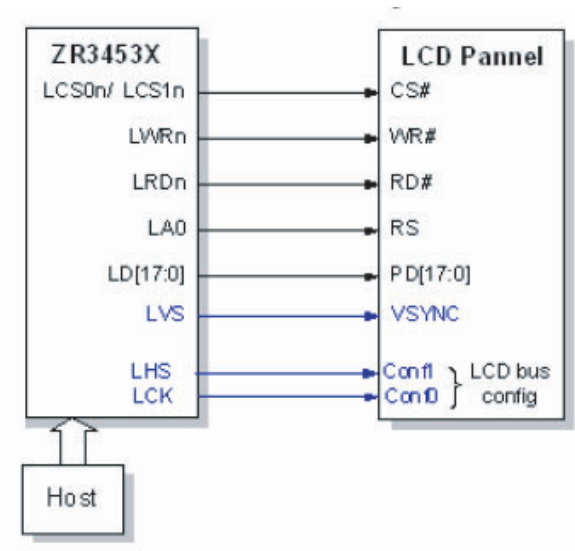
Image sensor resolution	Application
352 x 288 (CIF)	Video / Still
640 x 480 (VGA)	Video / Still
800 x 600 (SVGA)	Video / Still
1024 x 768 (XGA)	Video / Still
1280 x 960 (1.3MP)	Video / Still
1600 x 1200 (2MP)	Still
2048 x 1536 (3MP)	Still
2352 x 1728 (4MP)	Still
2592 x 1944 (5MP)	Still



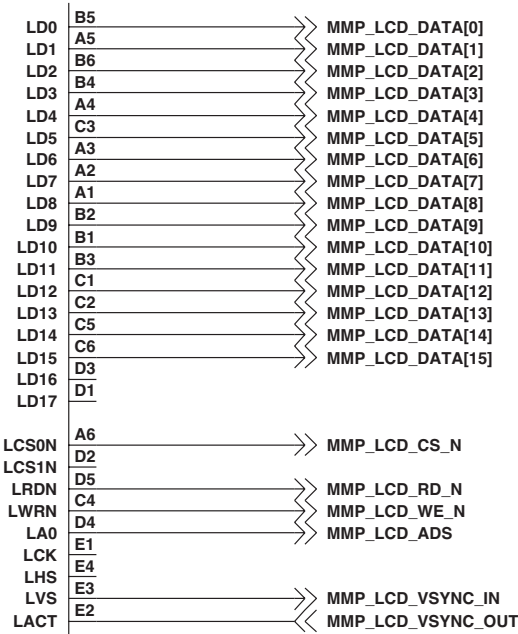
### 3. TECHNICAL BRIEF

#### 3.13.4 LCD Interface

The ZR345X LCD port supports mobile LCD panels of upto VGA size and upto 60fps refresh rate. There are various bus formats and color depth up to 18-bit (262K colors).



[ Block Diagram ]



[ Schematics ]

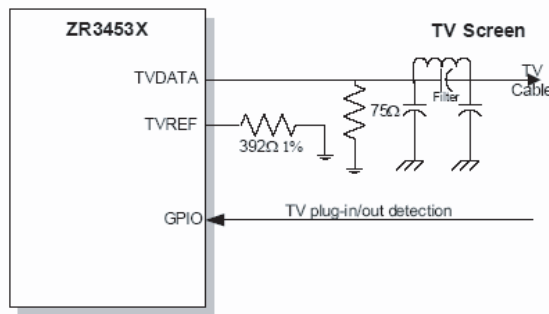
### 3.13.5 TV out Interface

The display data is converted to video with video-encoder according to CCIR-601 and sampled by 10-bit DAC and transmitted over an analog pad as a composite video signal.

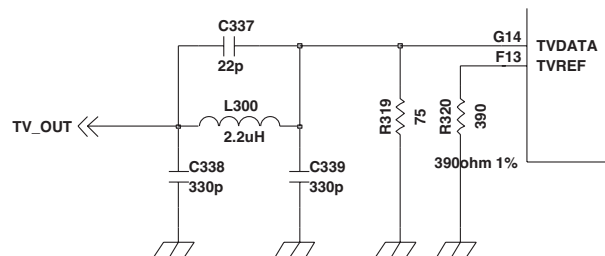
This mode is used in a system where ZR345X is connected gluelessly to a TV screen that requires real-time display data.

ZR345X generates TV signal according to the NTSC and PAL standards.

The TVDATA pin can drive a full video level signal directly into a 75 terminated TV cable.



[ Block Diagram ]



[ Schematics ]

### 3. TECHNICAL BRIEF

#### 3.13.6 Audio Interface

In this configuration ZR345X is connected to an external audio codec.

There are three possible configurations:

- Audio/Voice codec with two ports: PCM and I2S
- Audio/Voice codec with one port: I2S
- Audio/voice/data codec with one port: AC97

In all configurations ZR345X connects its external audio ports to the codec single or two ports.

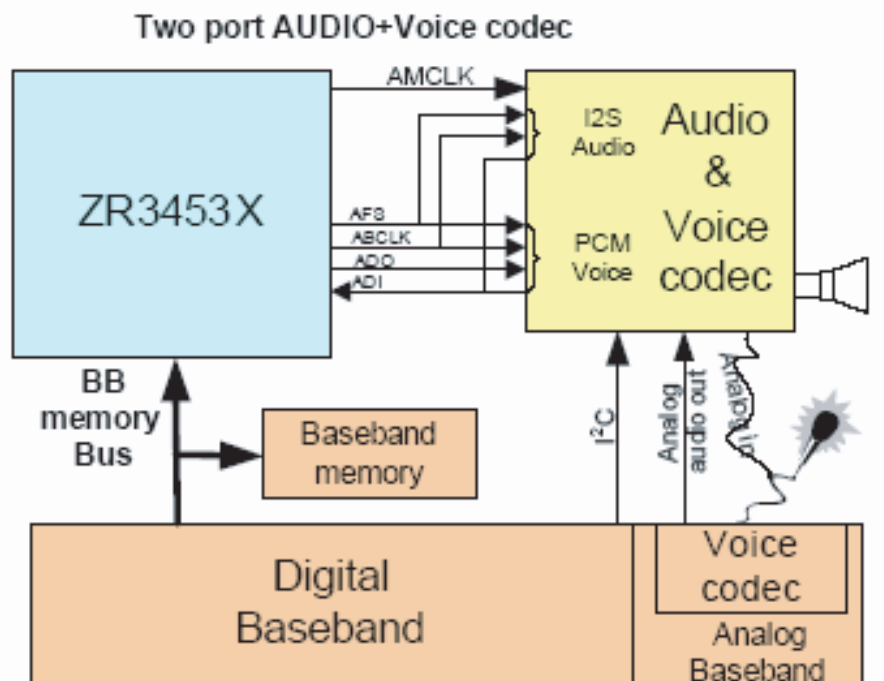
The host uses its internal voice codec for voice communication. There is no bypass of voice.

The host controls the codec configuration via I2C bus directly. The host codec analog audio output is connected to the external audio codec and muxed with the codec audio path from the ZR345X on the way is to the speaker.

The microphone is connected to the external audio codec and the baseband internal codec.

ZR345X appears in Figure 3-35 as a master on the bit clock and frame sync. This is only one of the possible configurations.

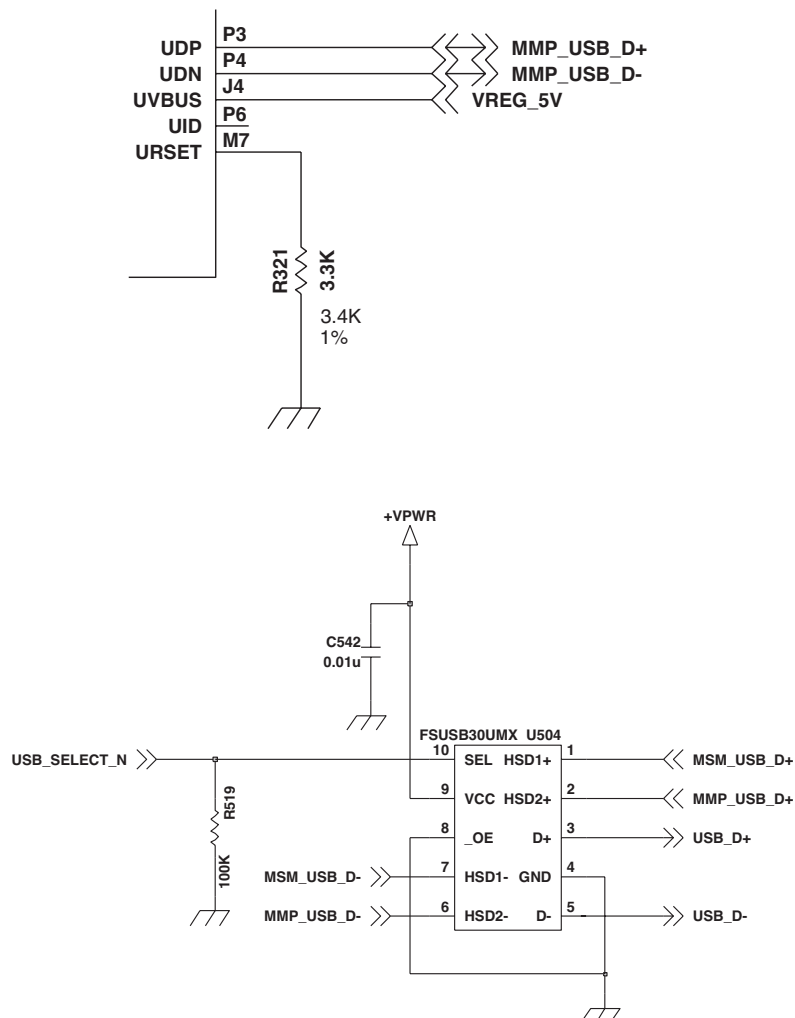
In external audio configuration ZR345X can run all the Audio/voice applications including conversation recording .



### 3.13.7 USB interface

ZR345X is a USB 2.0 Device or On-the-Go dual-role device (OTG) with the following characteristics:

- Complies with USB (Universal Serial Bus) 2.0 specifications
- Complies with On-the-Go Supplement 1.0a
- Integrated 45-ohm termination, 1.5Kilohm pull-up and 15-Kilohm pull-down resistors.
- Supports 480-Mbps high-speed, 12-Mbps full-speed and 1.5Mbps low-speed (Host mode only) data transmission rates.
- Control + 4 endpoints:
  - ❑ EP0 - two-way Control
  - ❑ 2-input , 2-output - Bulk, INT or ISO
- Suspend, resume, reset and SOF signaling



### SWITCH FOR USB2.0

### 3. TECHNICAL BRIEF

#### 3.13.8 MMC interface

ZR345X has a dedicated port for multimedia cards. It can support SD (Secure Digital) cards and SecureMMC (standard multimedia cards with security functions).

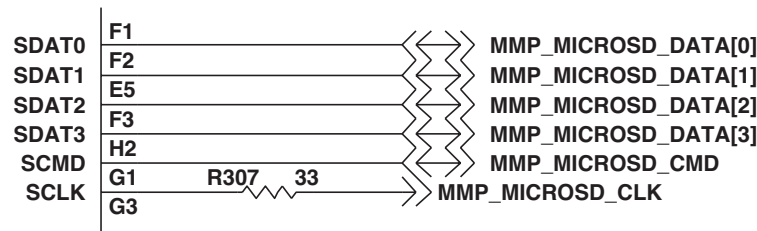
The same port can be used for HDD CE\_ATA connection or SDIO to peripheral devices (e.g.; MDTV front-end).

##### MMC

- MMC v4
- Dual voltage (separate IO power domain, host GPIO control)
- 1 or 4 bit cards
- Multiple cards support (if dual-voltage or high-speed interface are not used)
- Up to 43 MHz bit clock

##### SD

- 1 or 4 bit bus support
- High-Speed SD, up to 43 MHz bit clock



#### 3.13.9 Power Domain

Symbol	Parameter	Min.	Typ.	Max.	Units
V <sub>DDIO</sub>	I/O supply voltage (VDD_Host, VDD_PMU vs. GND)	1.62	1.8-3.3	3.6	V
V <sub>DDIO</sub>	I/O supply voltage (VDD_General, VDD_Serial, VDD_MMC, VDD_LCD, VDD_NAND, VDD_CIS vs. GND)	1.62 <sup>1</sup>	1.8-3.3	3.6	V
V <sub>SDRAM</sub>	SDRAM interface pins (VDDQ, VDD_SD_Core vs. GND)	1.7	1.8	1.95	V
V <sub>DDCORE</sub>	Core supply voltage (VDDCore vs. GND)	0.97	1	1.1	V
V <sub>DPLL</sub>	PLL digital supply (AVDD_PLL vs. AVSS_PLL)	0.97	1	1.1	V
V <sub>APLL</sub>	PLL analog supply (AHVDD_PLL vs. AHVSS_PLL)	0.97	1	1.1	V
V <sub>TVOUT</sub>	TVOUT analog supply (AVDD_VDAC, AVDD_VDAC_I vs. AGND_VDAC_BS, AGND_VDAC_P)	2.7	3.3	3.6	V
V <sub>USB</sub>	USB power supply (VDD_USB vs. GND_USB)	3.0	3.3	3.6	
T <sub>A</sub>	Ambient temperature	-40	25	85	°C

### 3.14 Touch Screen Interface

The TSC2007 device has a 12-bit analog-to-digital resistive touch screen converter including drivers and the control logic to measure touch pressure. The TSC2007 device is controlled by I2C port from MSM6280.

Touch Screen interface scheme is shown in Figure.

And, there control signals are followed

- TOUCH\_I2C\_SCL : I2C CLOCK
- TOUCH\_I2C\_SDA : I2C DATA
- TOUCH\_PENIRQ\_N : DETECT

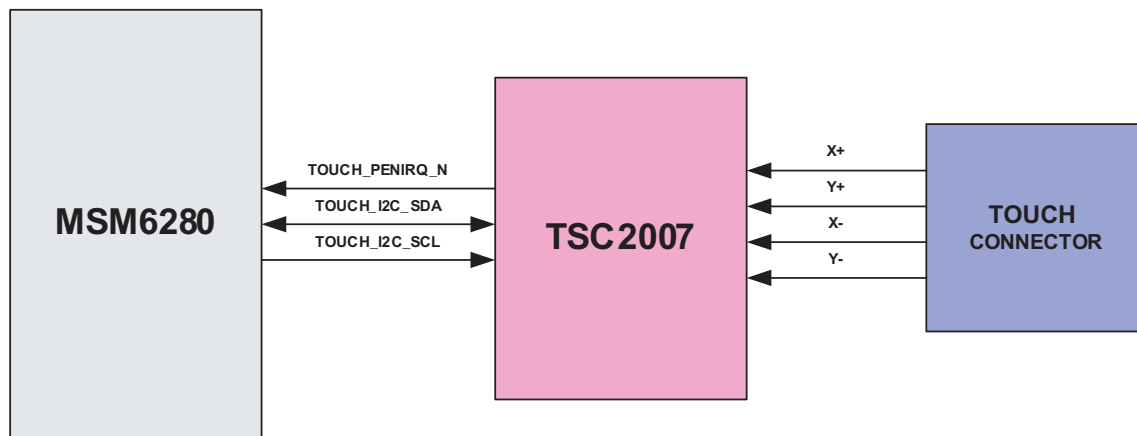
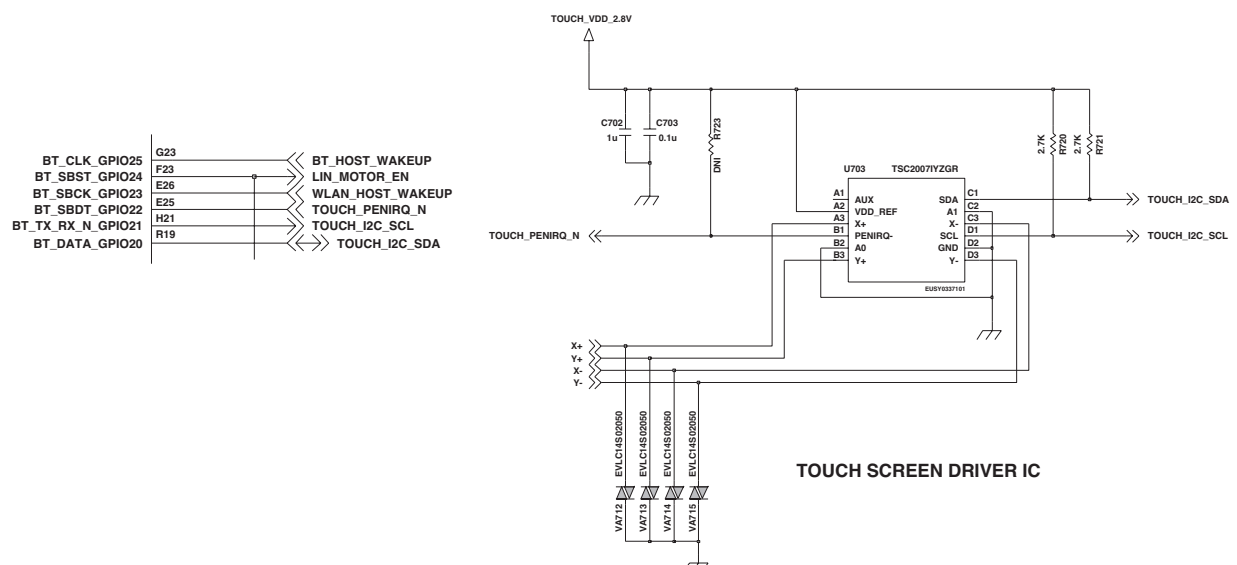


Figure. Touch Screen Interface



### 3. TECHNICAL BRIEF

#### 3.15 Ambient Light Sensor Interface

Ambient Light Sensor is controlled by Charge Pump.

Ambient Light Sensor interface scheme is shown in Figure.

And, there control signals are followed

- SSENS
- SBIAS
- GAIN1
- GAIN2

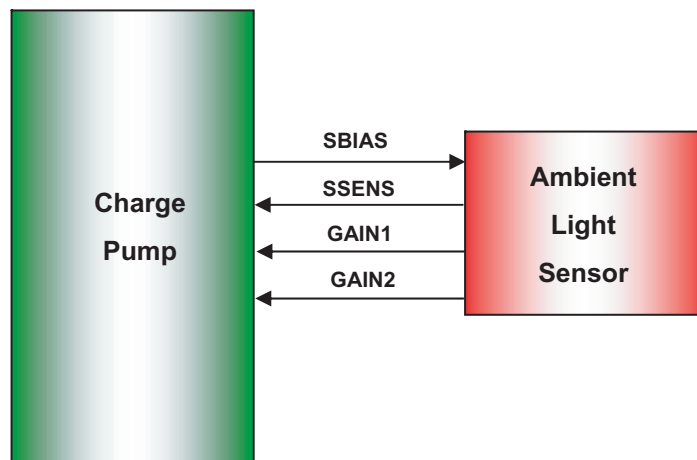
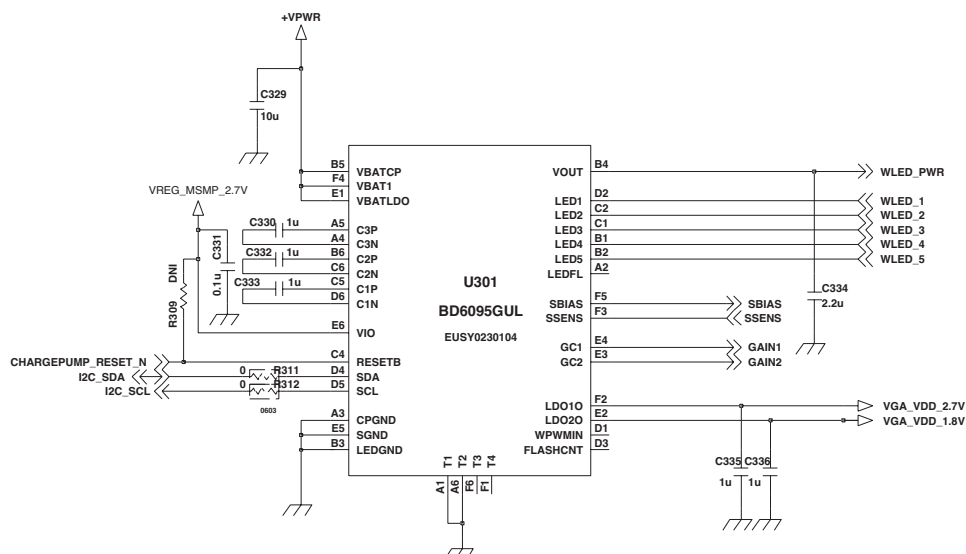


Figure. Ambient Light Sensor Interface



### 3.16 Main features of KC910

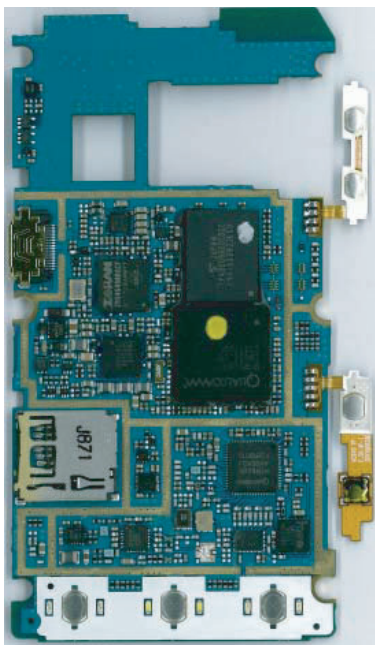
- BAR Type
- WCDMA(900/2100) + GSM(900,1800) + PCS(1900) Triple mode
- Main LCD: 240x400/3.0"/262K TFT
- 8M Pixel AF Camera
- VGA CMOS Camera
- 20X12 module speaker
- Stereo Headset
- Video telephony in WCDMA with camera
- HSDPA up to 3.6 Mbps
- Loud Speaker phone(in GSM and WCDMA)
- 64 Poly Sound
- Audio: MP3, AAC, AAC+,AAC++, WMA, WAV
- MPEG4 encoder/decoder and play/save
- H.263 decoder
- Video Recording: VGA 30 fps
- JPEG en/decoder
- Support Bluetooth, USB, Wi-Fi, GPS
- FM Radio
- Touch screen, Touch feedback
- 1000mAh soft pack



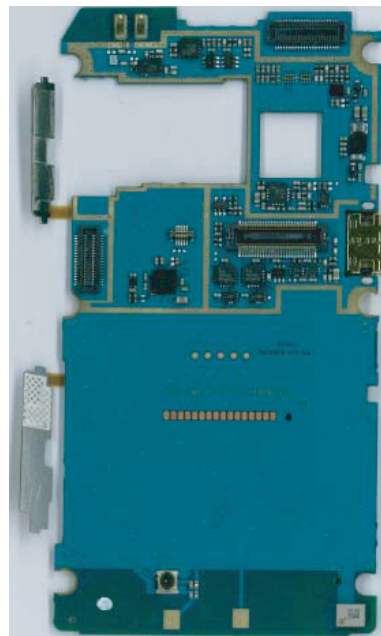
### 3. TECHNICAL BRIEF

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#### 3.16 Main Components of KC910



**MAIN Top Side**



**MAIN Bottom Side**



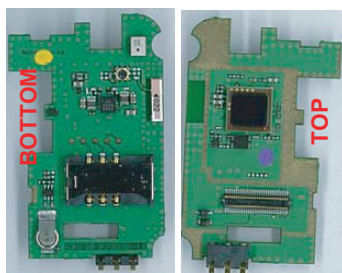
**VGA camera**



**8M camera**



**Main FPCB**



**Sub PCB**



**Antenna**

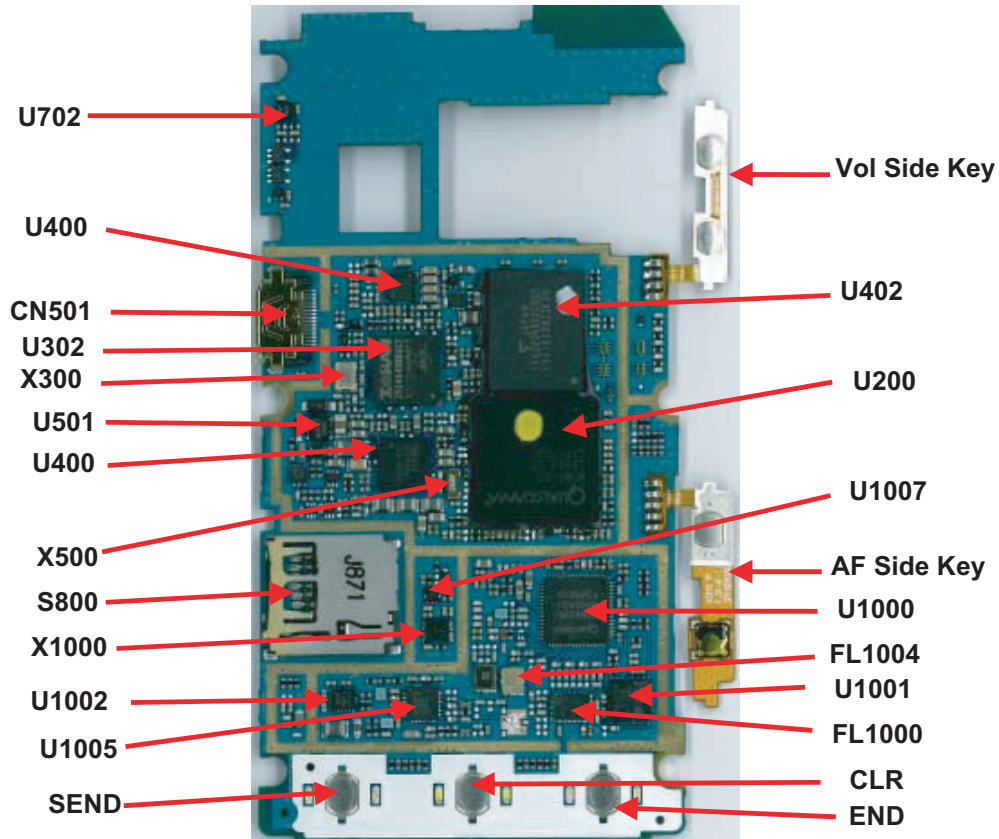


**Strobe Flash**



**LCD**

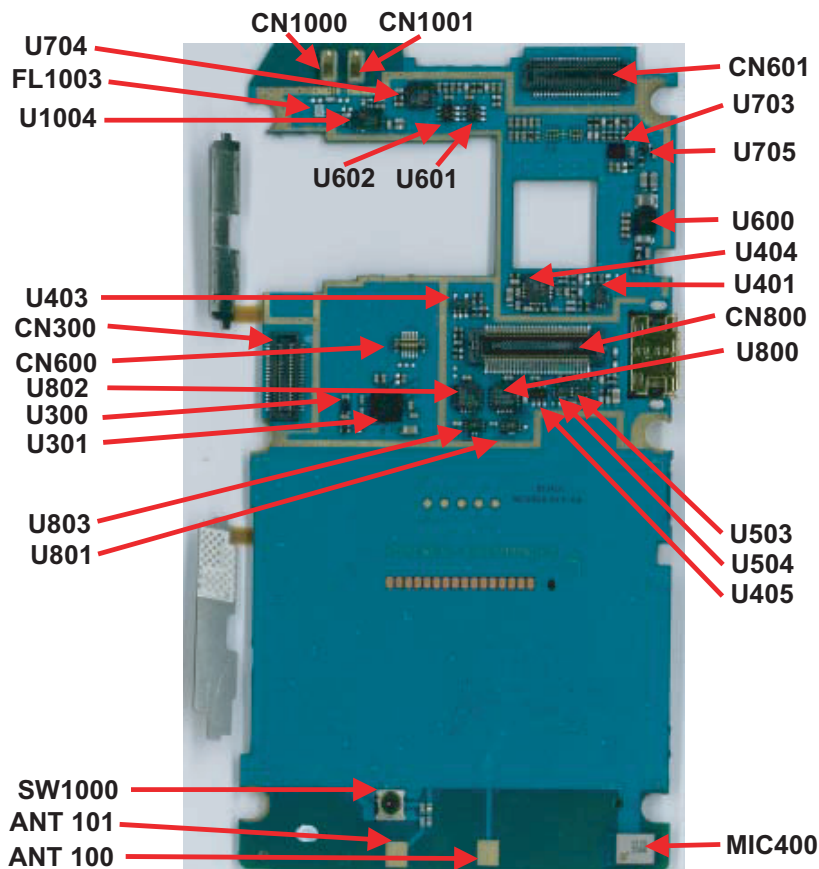
#### 3.16.1. Main Top Side



Reference	Description	Reference	Description
U702	Linear Motor Driver IC	Vol Side key	Volume Side Key
U400	WM8990 Audio AMP IC	U402	Memory IC
CN501	TA and USB Connector	U200	MSM6280 Modem IC
U302	ZR3453 DSP IC	U1007	D-Flip Flop IC for GPS
X300	27Mhz Crystal Oscillator	AF Side Key	AF Side Key FPCB
U501	Over Voltage Protection IC	U1000	RTR6285 RF IC
U500	PM6658 PMIC	FL1004	Duplexer IC for WCDMA
X500	32.768KHz Crystal Oscillator	U1001	PAM IC for GSM
S800	T-Flash Connector	FL1000	Antenna Switching Module
X1000	19.2MHz Crystal Oscillator for TCXO	SEND	Send Key
U1002	DCDC IC for WCDMA	CLR	Menu Key
U1005	PAM IC for WCDMA	END	End Key

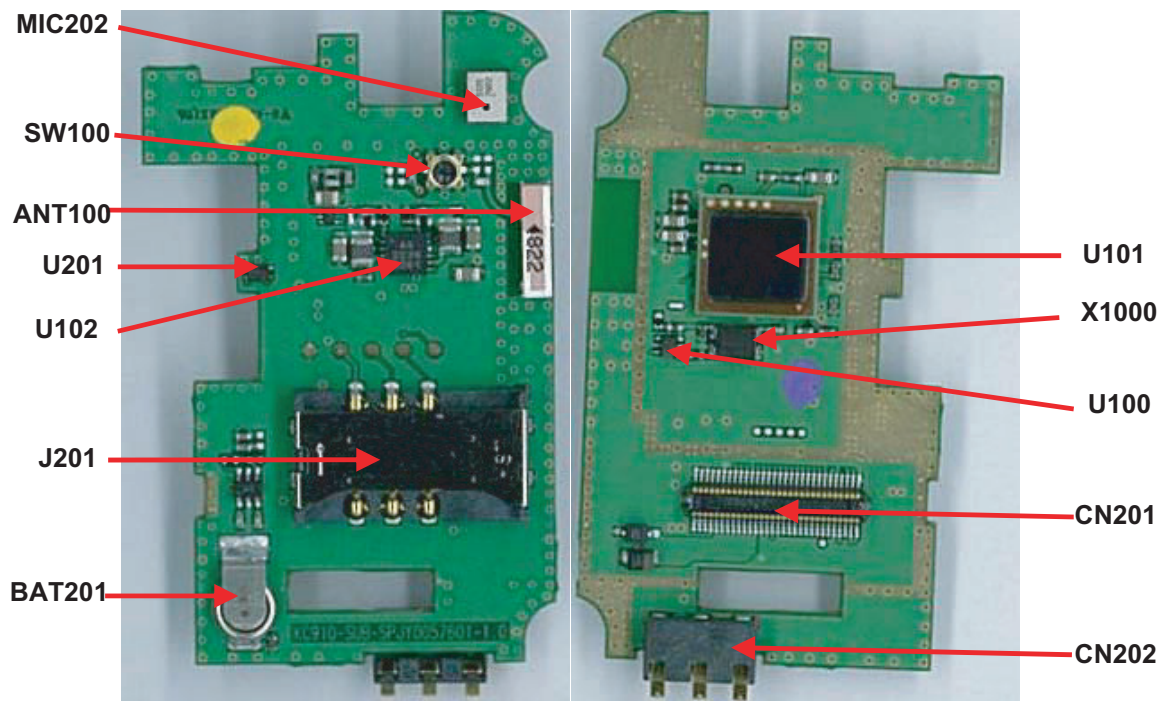
### 3. TECHNICAL BRIEF

#### 3.16.2 Main Bottom Side



Reference	Description	Reference	Description
CN1000	GPS Antenna PAD	CN1001	GPS Antenna PAD
U602	Analog SwitchñCamera Clock	U602	Analog SwitchñCamera Clock
U704	Motion Sensor Chip	CN601	Main PCB-FPCB B to B connector
FL1003	GPS SAW Filter	U703	Touch Driver IC
U1004	GPS LNA	U404	Headphone Amp
U403	Hook sense comparator	U401	Analog Switch
CN300	LCD connector	CN800	Main-Sub PCB B to B connector
CN600	Strobe Flash Connector	U800	Analog Switch-WiFi/T-Flash
U802	Analog Switch-WiFi/T-Flash	U503	Analog Switch
U300	LCD LDO	U504	Analog Switch-USB
U301	Charge Pump	U405	Analog Switch
U803	Analog Switch-WiFi/T-Flash	MIC400	Main Mic
U801	Analog Switch-WiFi/T-Flash	ANT 101	Main Intenna Connection PAD
SW100	RF Switch	ANT 100	Main Intenna Connection PAD

### 3.16.3 Sub PCB

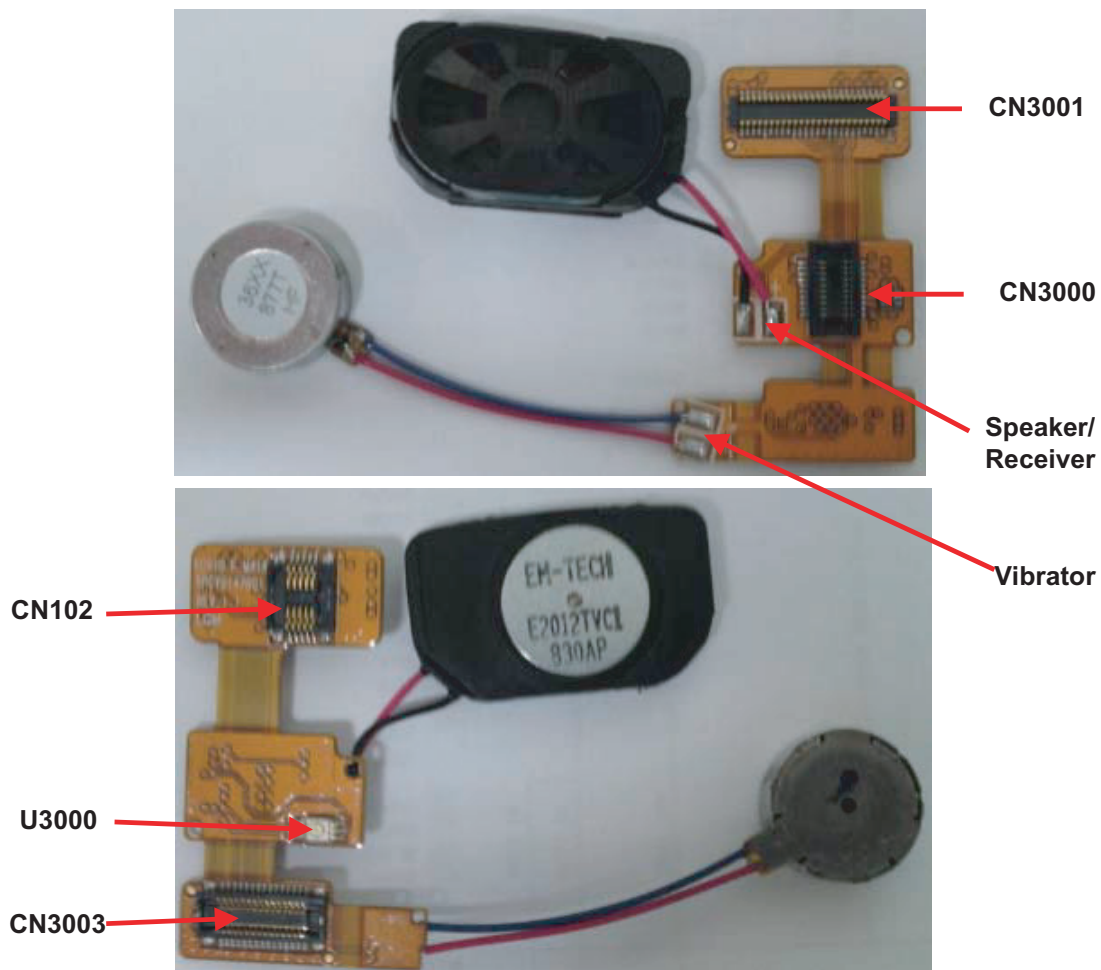


Reference	Description	Reference	Description
MIC202	CAM MIC	BAT201	Backup Battery
SW100	BT / WIFI Switch	U101	BT / WIFI / FM Radio Module IC
ANT100	WIFI / BT Antenna		
U201	Hall IC for Lens Cover Detection	U100	LDO IC for TCXO
U102	DCDC Convertor IC	CN201	Main-Sub B-to-B Connector
J201	USIM Connector	CN202	Battery Connector



### 3. TECHNICAL BRIEF

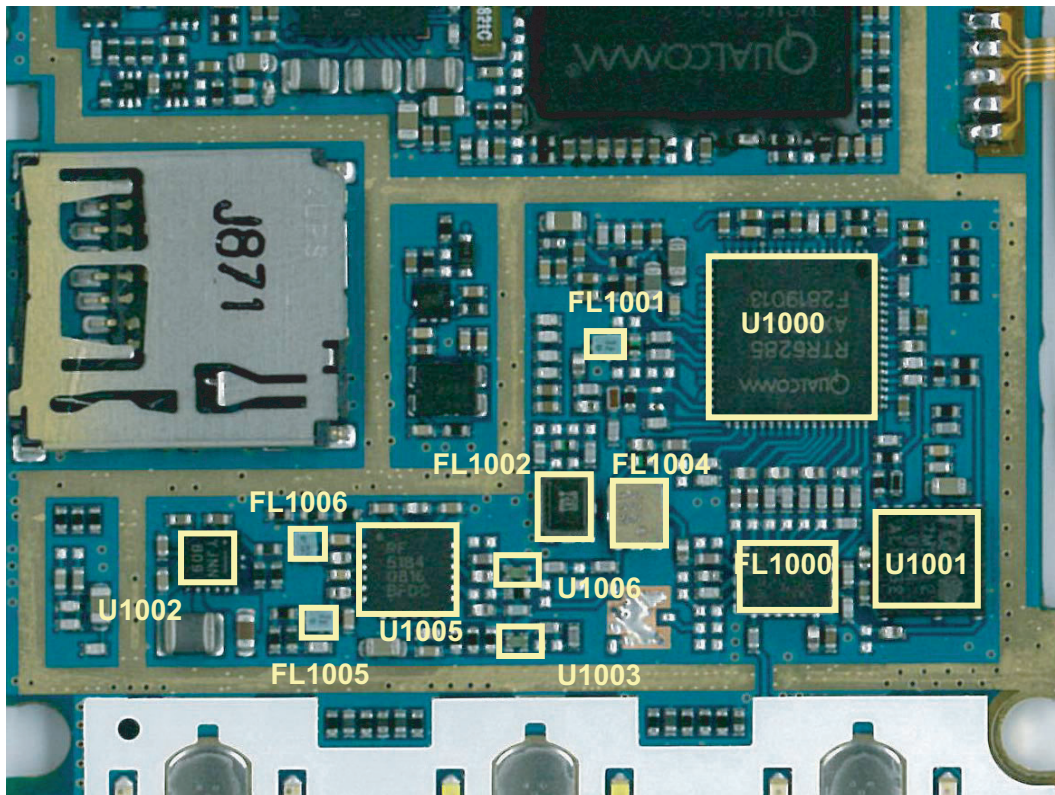
#### 3.16.4 Main FPCB



Reference	Description	Reference	Description
CN102	Touch Window Connector	CN3001	Main B-to-B Connector (FPCB to Main PCB)
U3000	Ambient Light Sensor IC	CN3000	VGA_CAMERA Connector
CN3003	8MP_CAMERA Connector	Vibrator	Vibrator PAD
		Speaker/Receiver	Speaker & Receiver Module PAD

### 4. TROUBLE SHOOTING

#### 4.1 RF Component

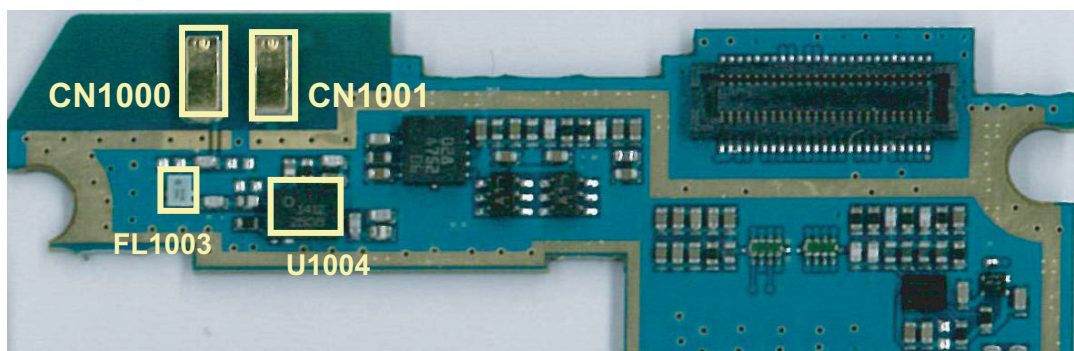


RF component (WCDMA / GSM)

Reference	Description	Reference	Description
U1001	QUAD band EDGE PAM	FL1005	WCDMA 900 TX SAW
U1000	GSM/WCDMA Transceiver	FL1002	WCDMA 900 Duplexer
U1005	WCDMA PAM	FL1000	FEM
U1006	Coupler for 2100 / 1900 band	FL1001	WCDMA2100 RX SAW
U1003	Coupler for 900 / 850 band	FL1004	WCDMA2100 Duplexer
FL1006	WCDMA 2100 TX SAW	U1002	DC-DC converter

## 4. TROUBLE SHOOTING

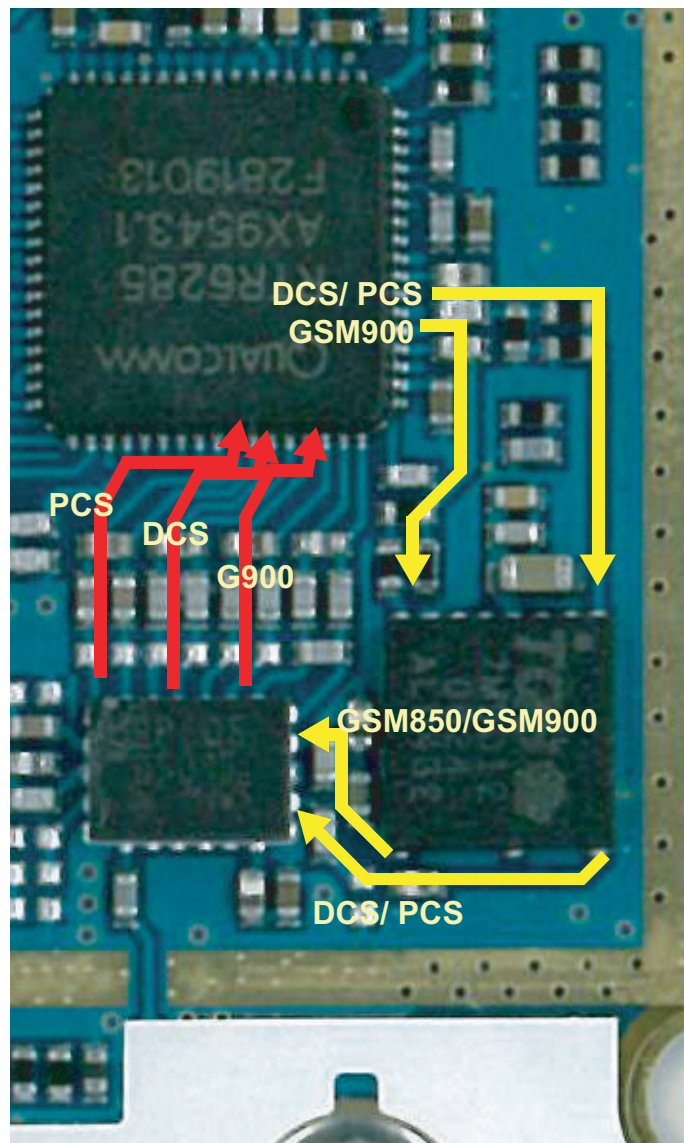
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**RF component (GPS)**

Reference	Description
CN100X	ANTENNA PAD connected to carrier type antenna
FL1003	GPS SAW FILTER
U1004	GPS LNA

### 4.2 SIGNAL PATH



### GSM900/DCS/PCS Rx Tx PATH

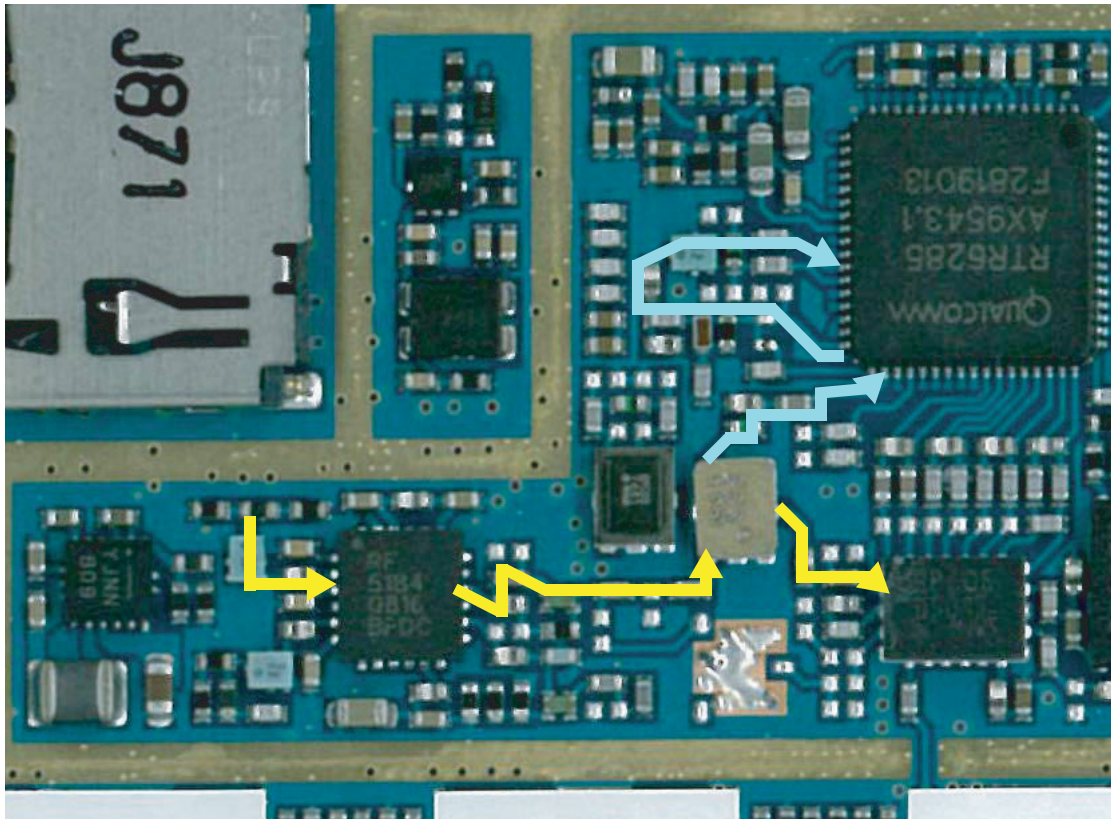
**A. GSM/DCS/PCS Rx PATH**

**B. GSM/DCS/PCS Tx PATH**



## 4. TROUBLE SHOOTING

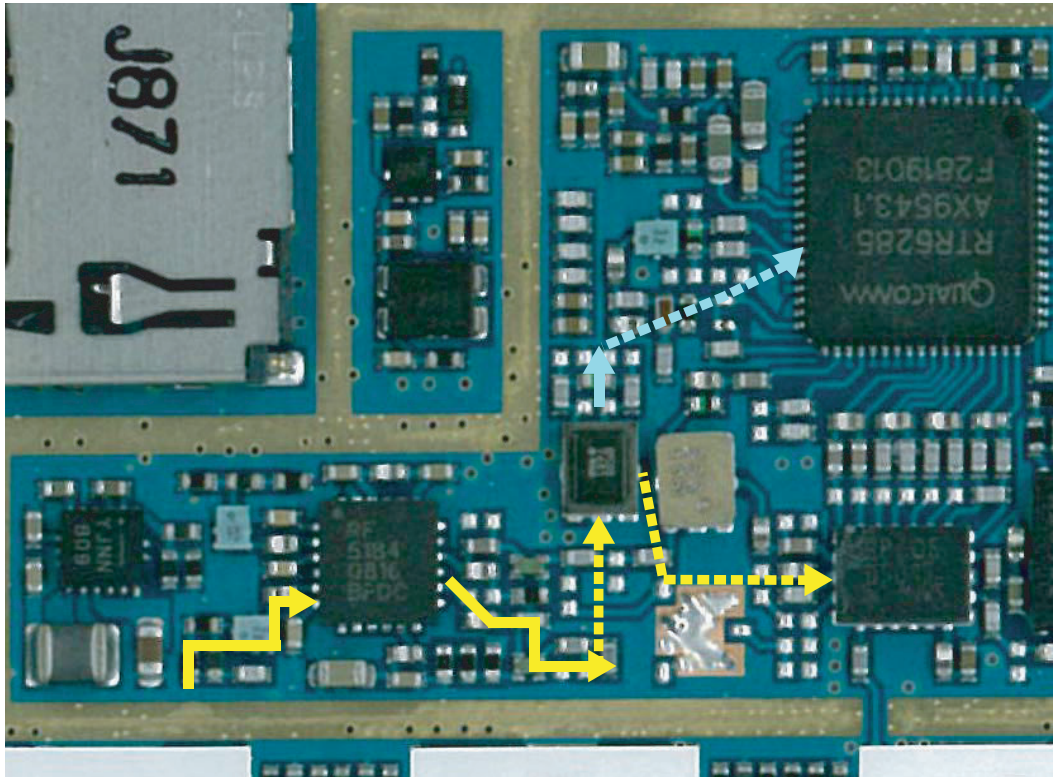
---



### WCDMA2100 RX/ TX PATH

C. WCDMA Rx PATH

D. WCDMA Tx PATH



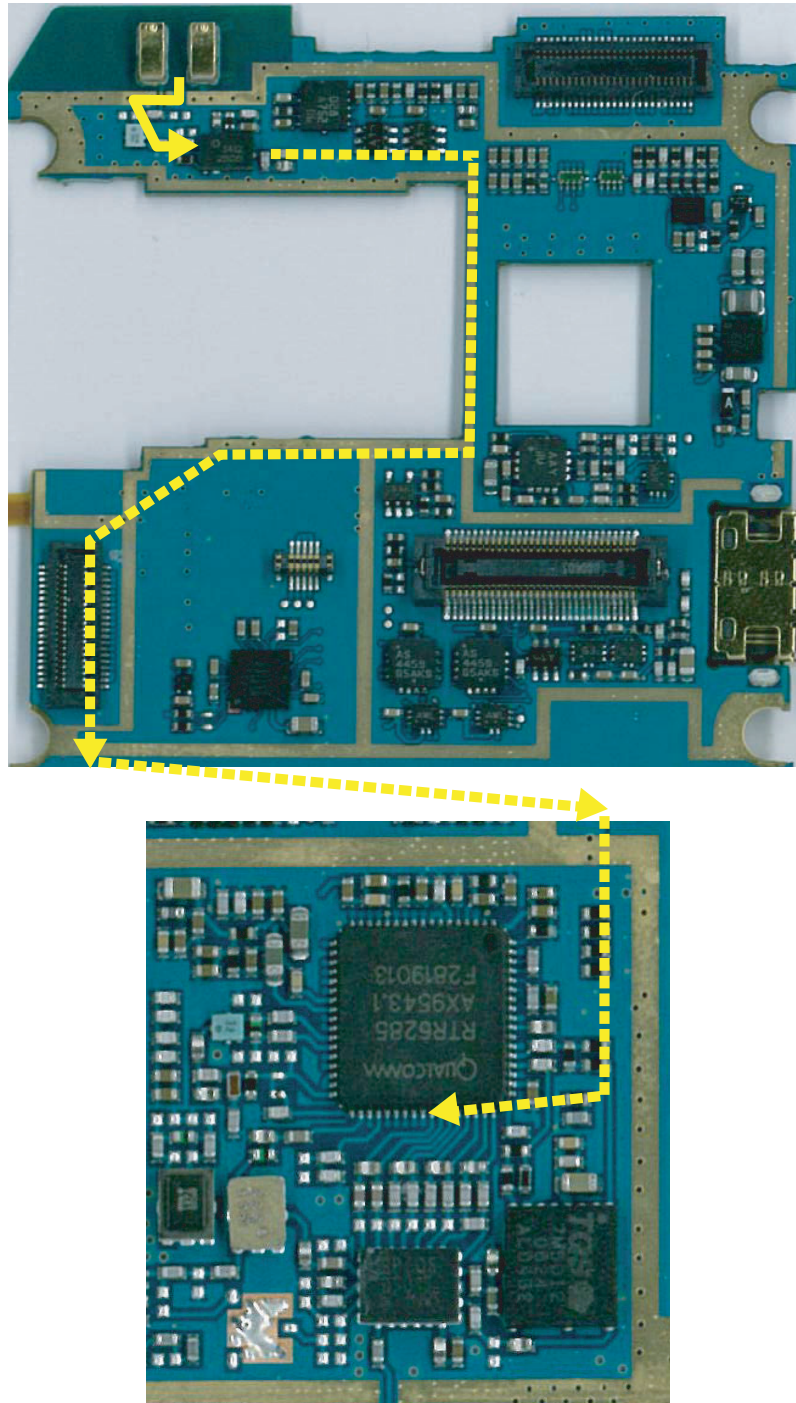
## WCDMA900 RX/ TX PATH

## C. WCDMA Rx PATH

## D. WCDMA Tx PATH

## 4. TROUBLE SHOOTING

---

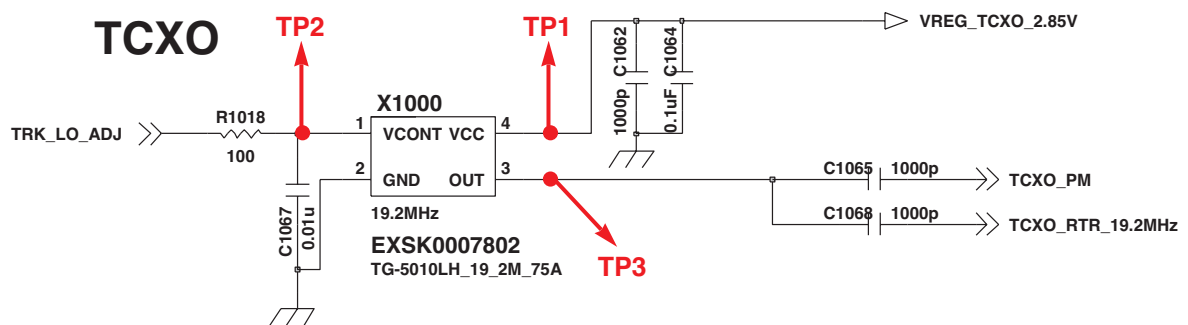
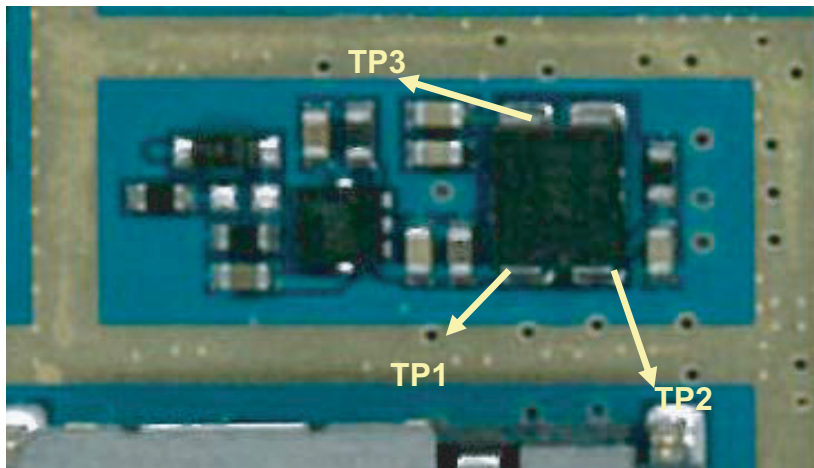


**GPS Signal PATH**

**E. GPS Rx PATH**

### 4.3 Checking TCXO Block

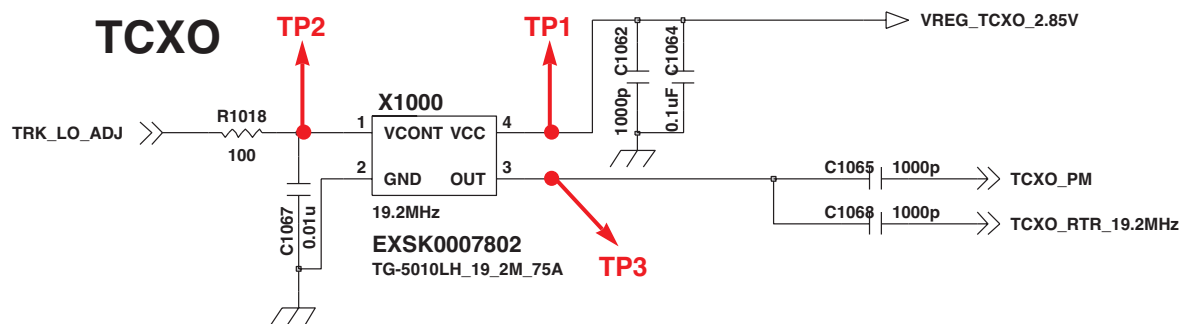
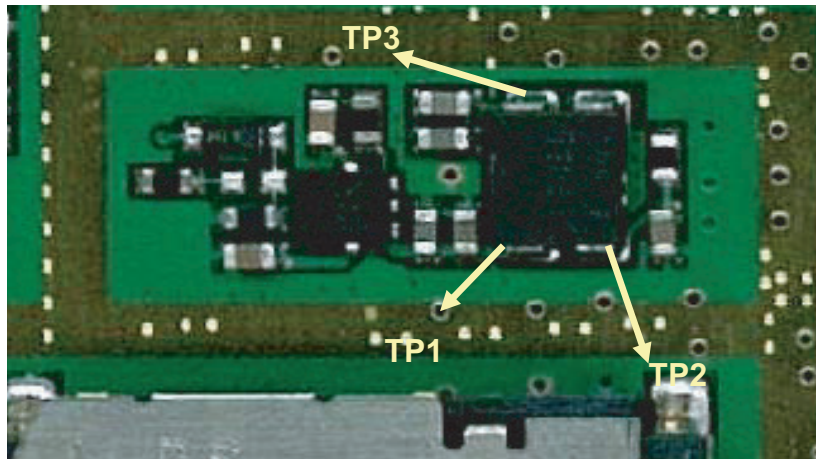
The output frequency (19.2MHz) of TCXO (X1000) is used as the reference one of RTR6285 and PM6658 internal VCO.



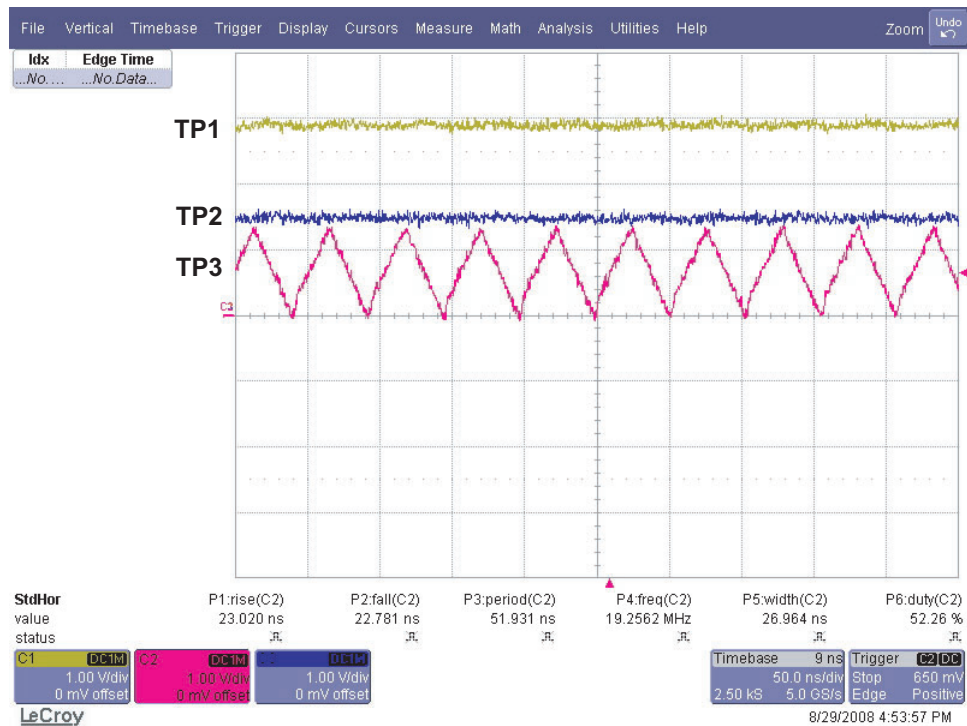
Schematic of the Oscillator Part (19.2MHz)



## 4. TROUBLE SHOOTING



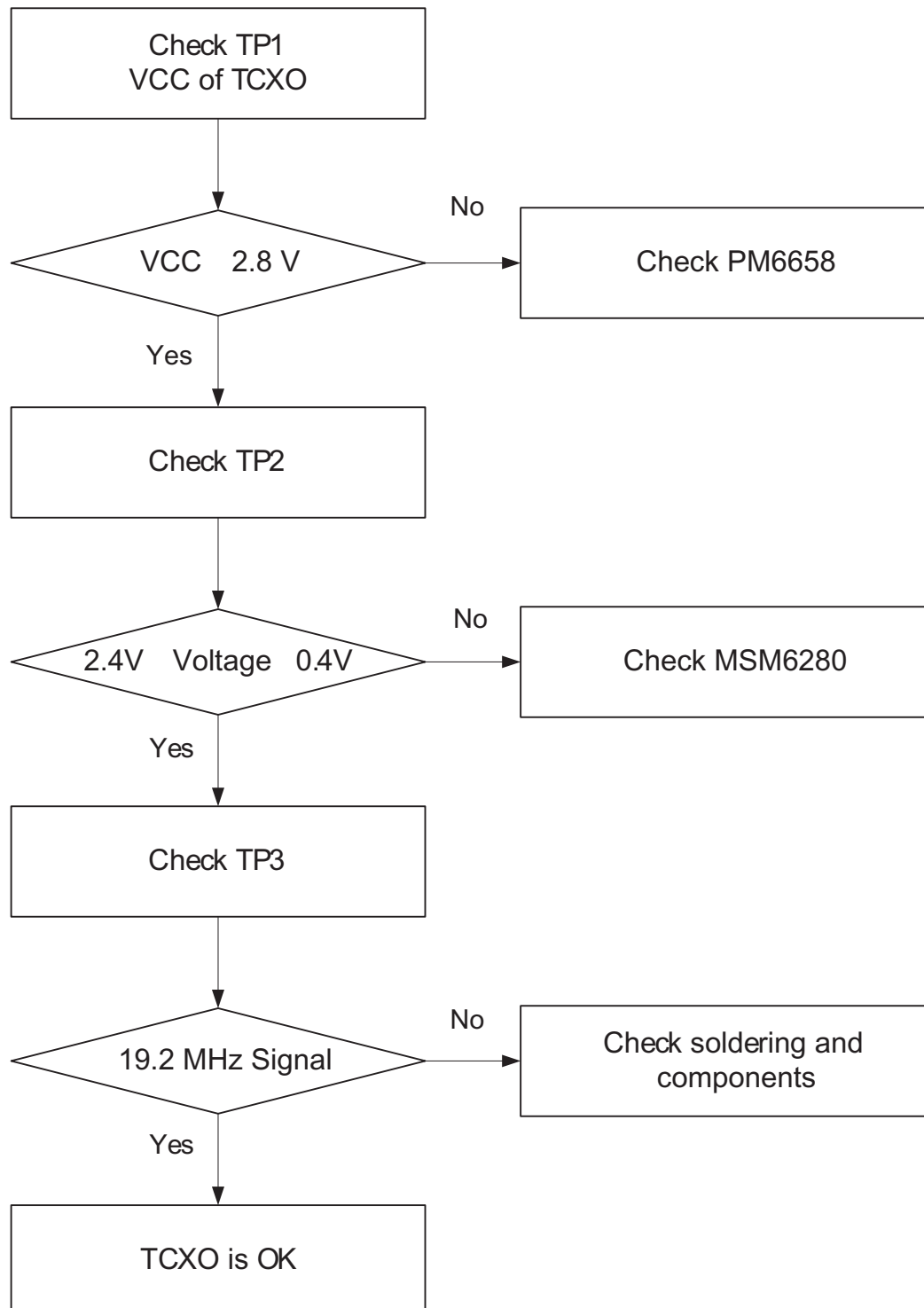
## 4. TROUBLE SHOOTING



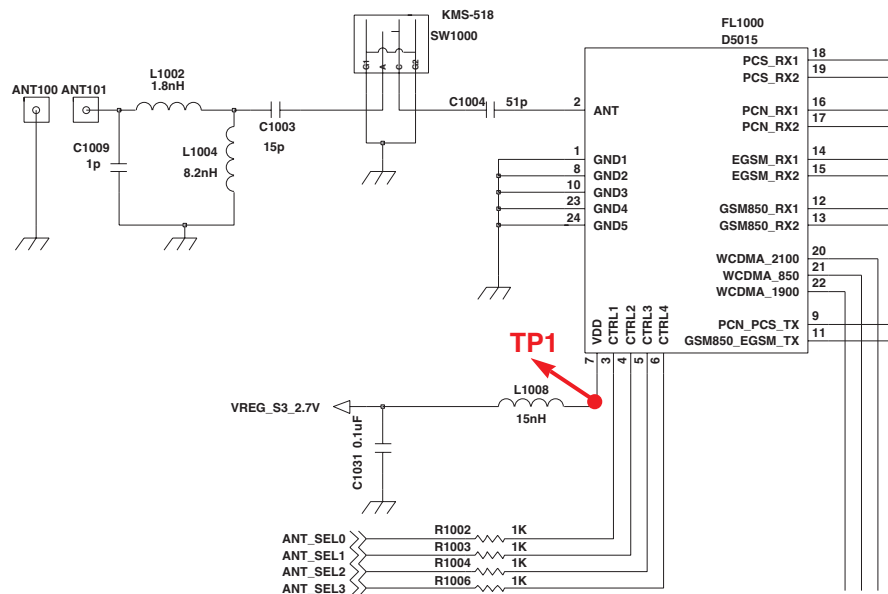
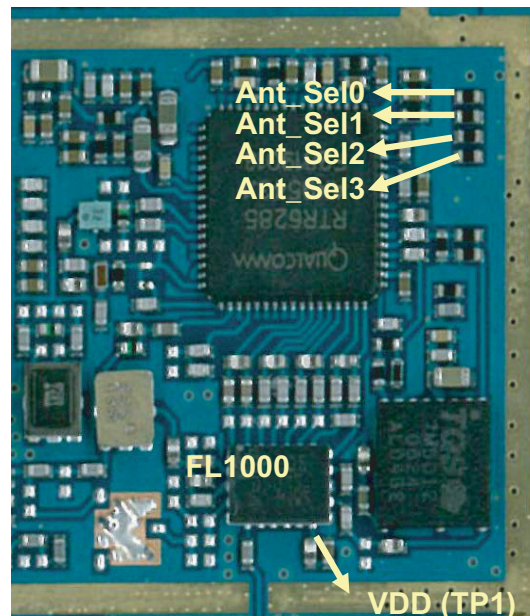
Schematic and TP1, TP3 wave of the Oscillator Part (19.2MHz)

## 4. TROUBLE SHOOTING

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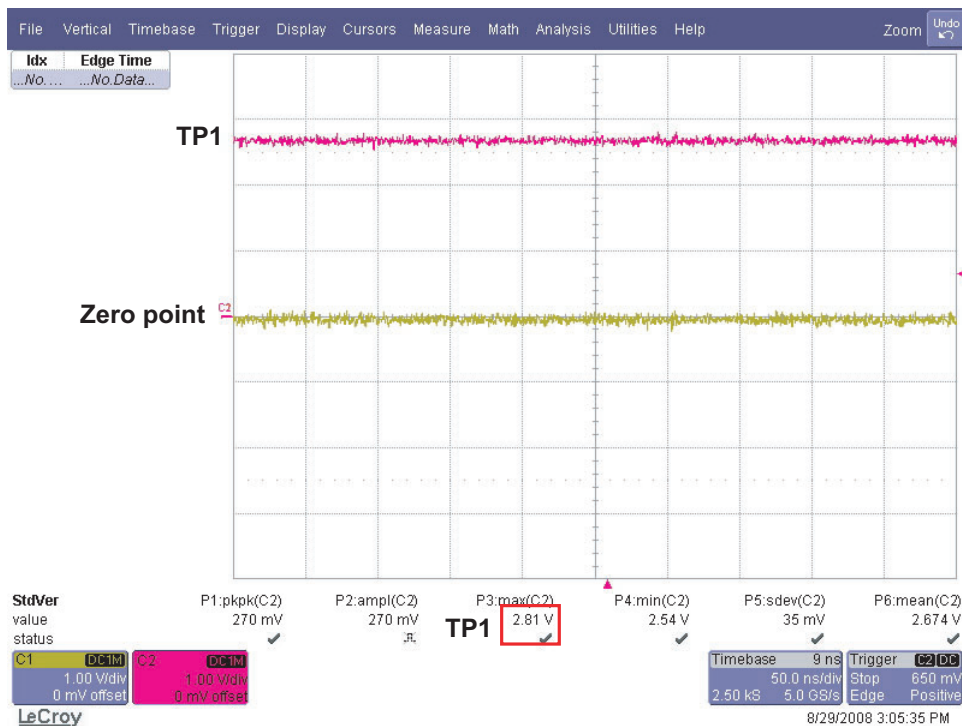
### 4.4 Checking Ant. Switch Module Block



Schematic of the Antenna Switch Block



## 4. TROUBLE SHOOTING

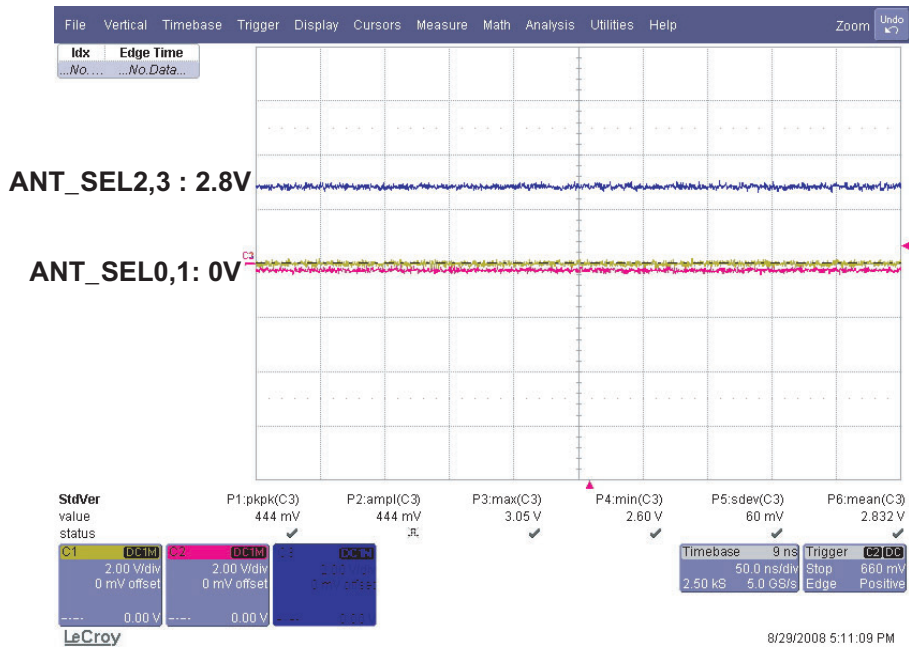


Schematic and TP1 wave of the Antenna Switch Block

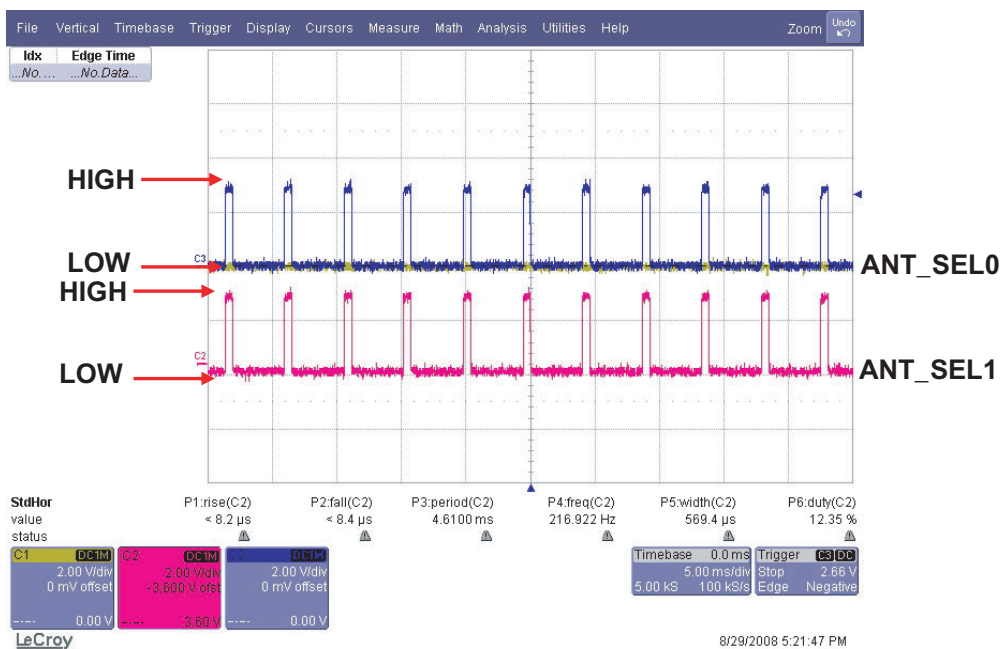
Logic Table of the Antenna Switch

	ANT_SEL0	ANT_SEL1	ANT_SEL2	ANT_SEL3
EGSM TX	HIGH	HIGH	LOW	LOW
DCS/PCS TX	HIGH	LOW	LOW	LOW
WB900	LOW	HIGH	LOW	HIGH
WB1900	LOW	LOW	LOW	HIGH
WB2100	LOW	LOW	HIGH	HIGH
GSM850 RX	LOW	HIGH	HIGH	LOW
EGSM RX	LOW	LOW	HIGH	LOW
DCS RX	LOW	HIGH	LOW	LOW
PCS RX	LOW	LOW	LOW	LOW

## 4. TROUBLE SHOOTING



Logic Table for case of WCDMA 2100

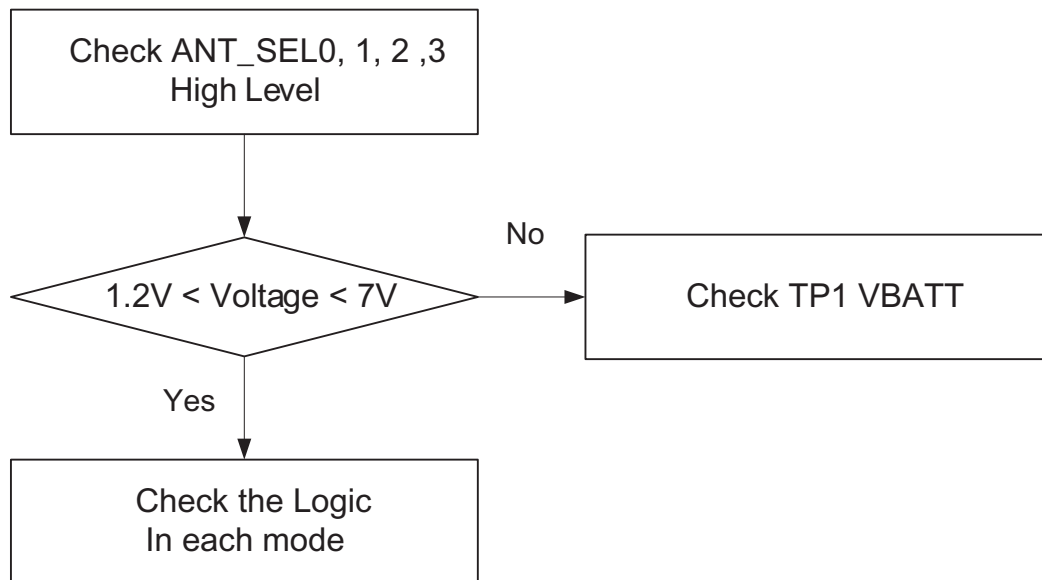


Logic Table for case of GSM 900

(high state when every about 4.6ms time interval because of TDMA)

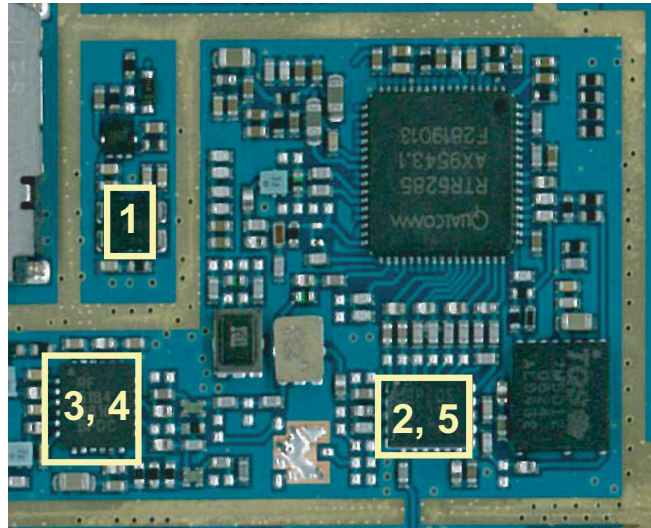
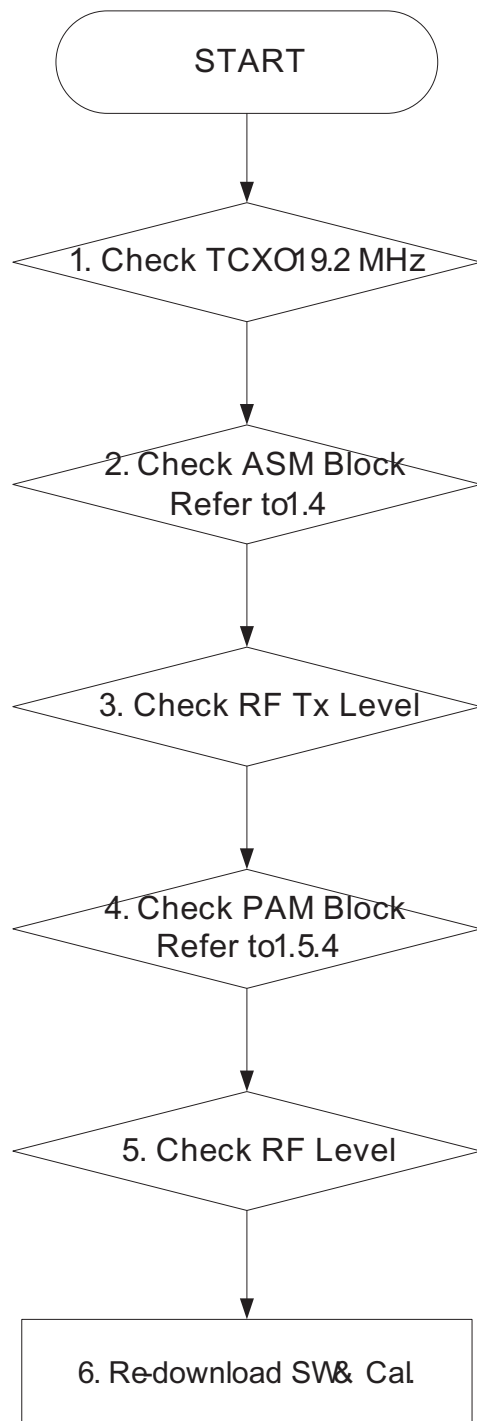
## 4. TROUBLE SHOOTING

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### 4.5 Checking WCDMA Block

## 4. TROUBLE SHOOTING



## 4. TROUBLE SHOOTING

---

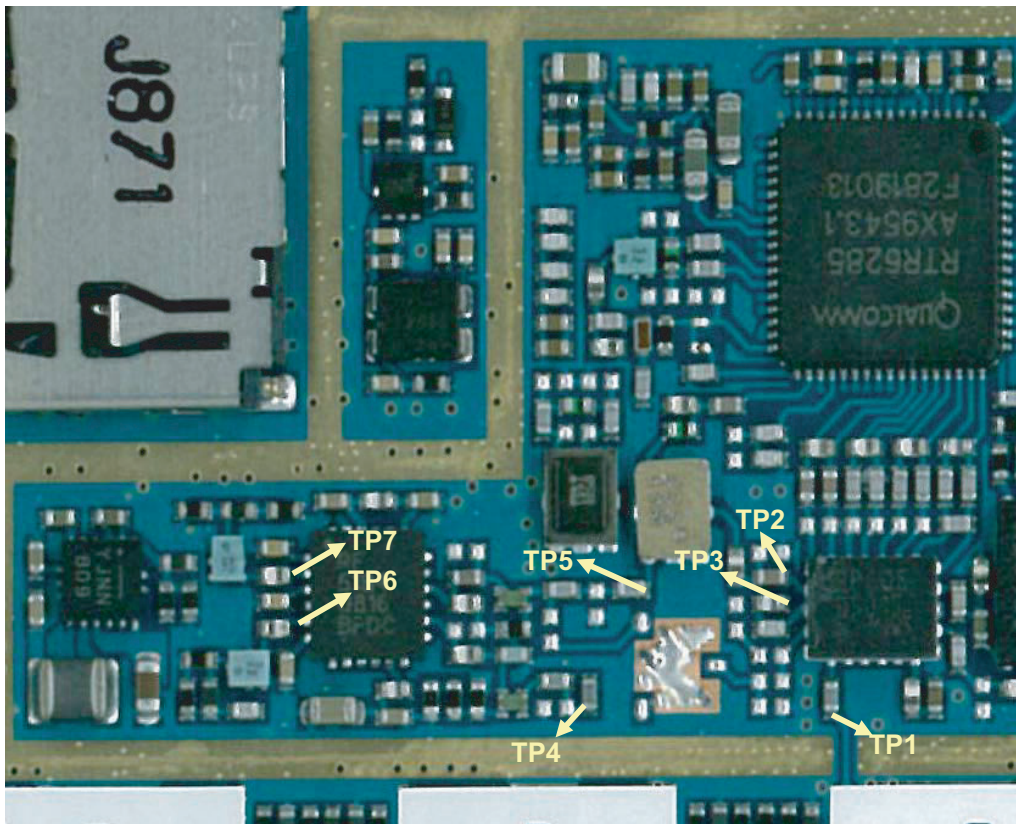
### 4.5.1 Checking TCXO Block

Refer to 1.3

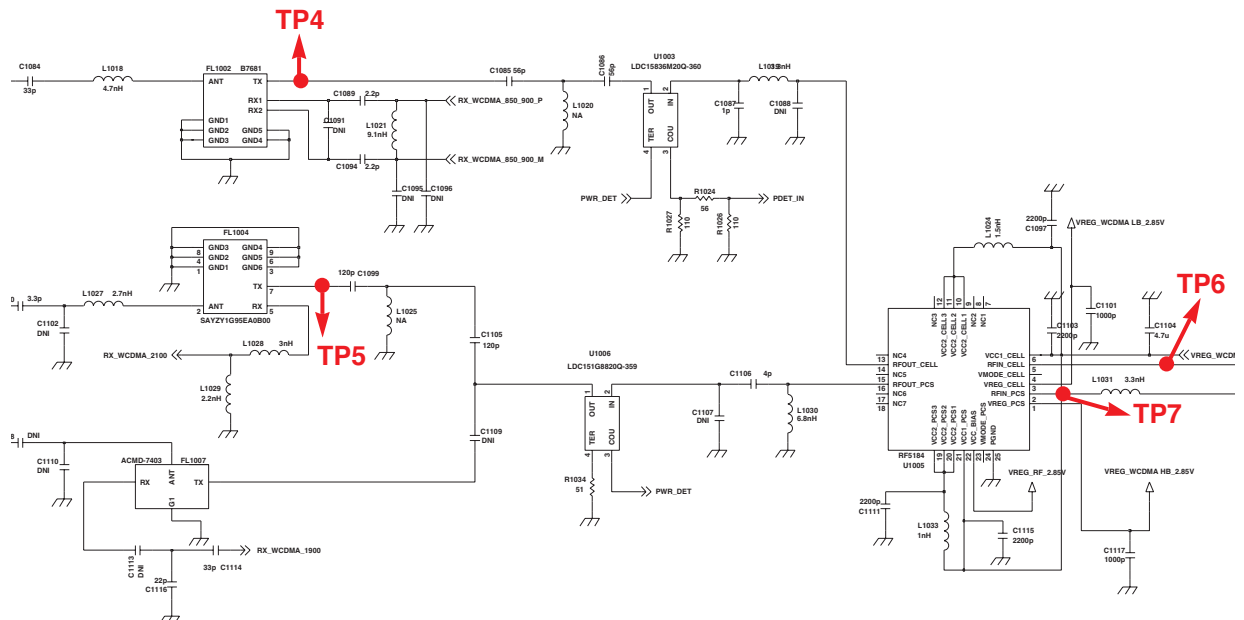
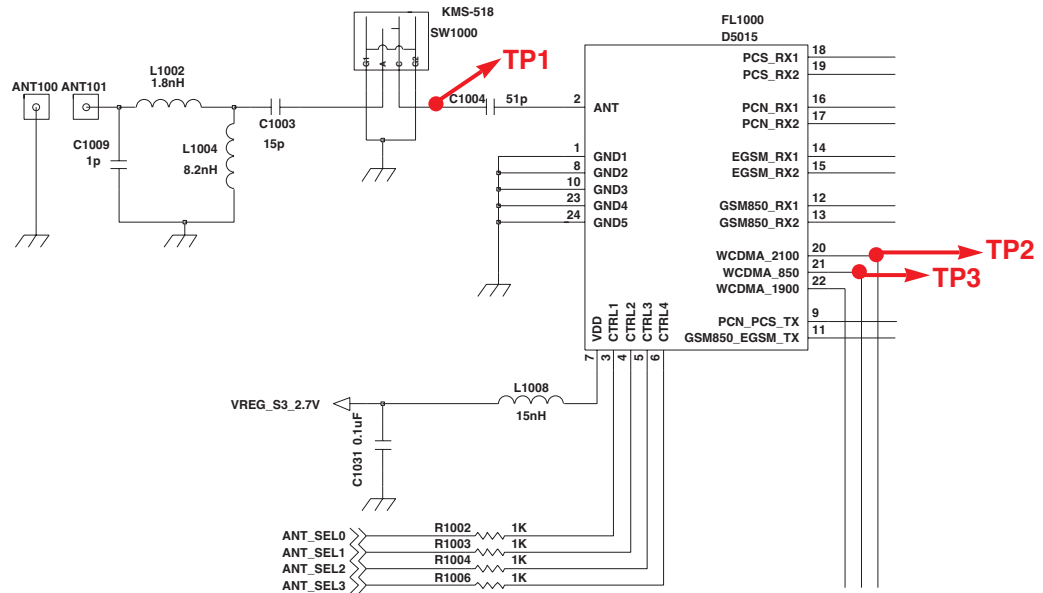
### 4.5.2 Checking ASM Block

Refer to 1.4

### 4.5.3 Checking RF TX Level



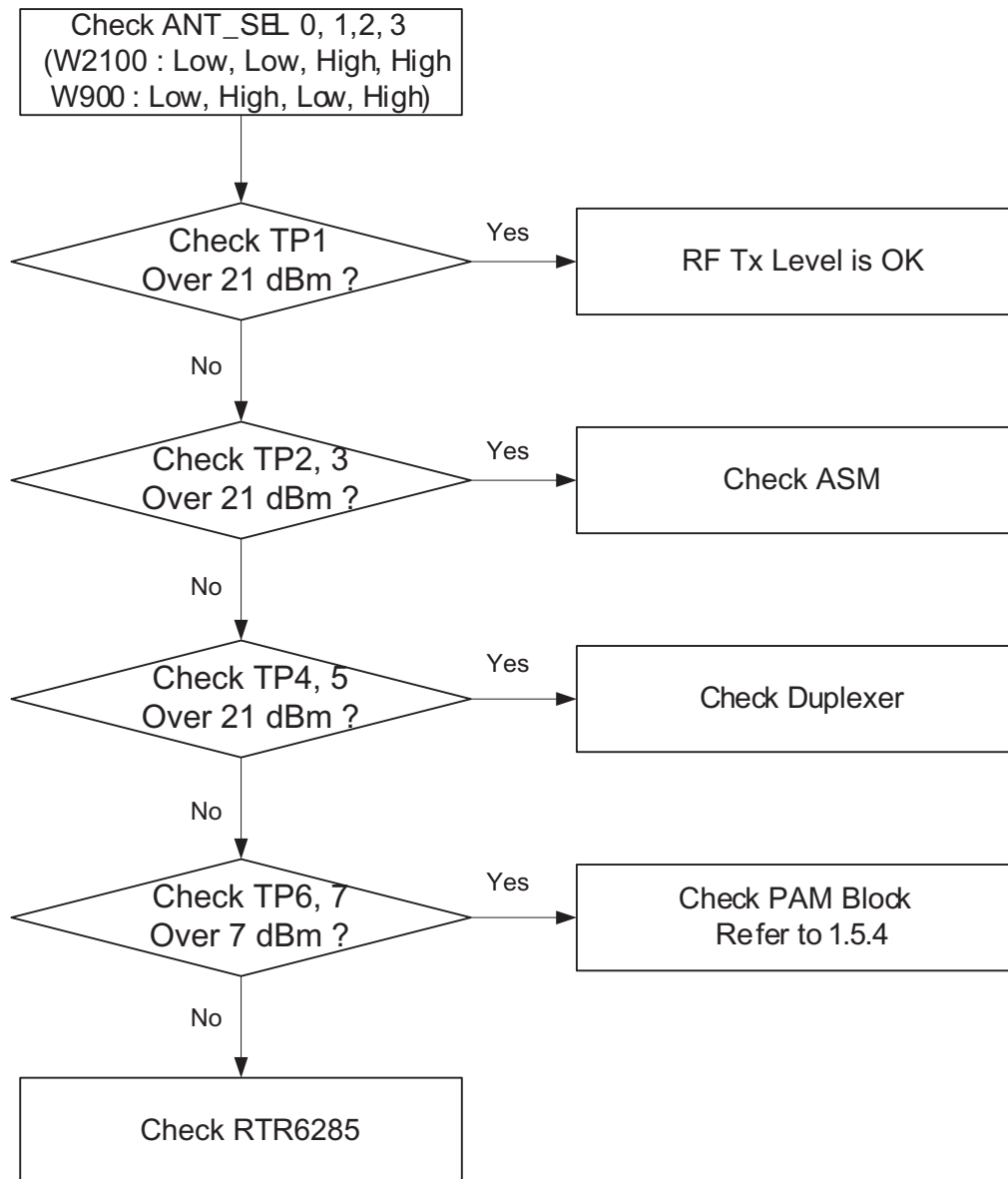
Test Point (TX Level)



## 4. TROUBLE SHOOTING

---

For testing, Max power output is needed.



RTR6285 Maximum output Power = 7 dBm  
RTR6285 minimum output Power = -80 dBm  
PAM(RF5184) = Maximum input Power = 10 dBm



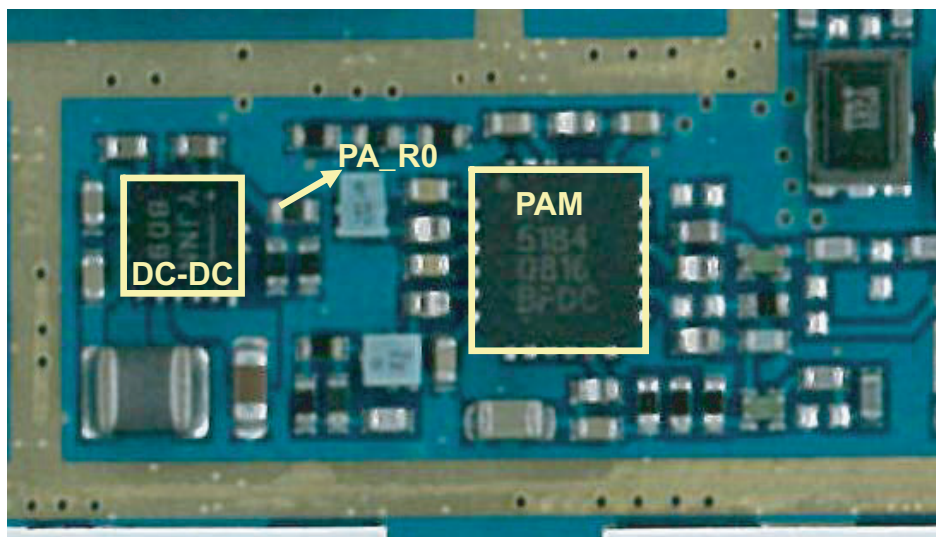
### 4.5.4 Checking PAM Block

#### PAM control signal

PA\_ON1(pin 4 of DCDC converter) : WCDMA High band Enable

PA\_ON0(pin 13 of DCDC converter) : WCDMA Low band Enable

PA\_R0: PAM Gain Control ( Low : Low PWR, High : High PWR)



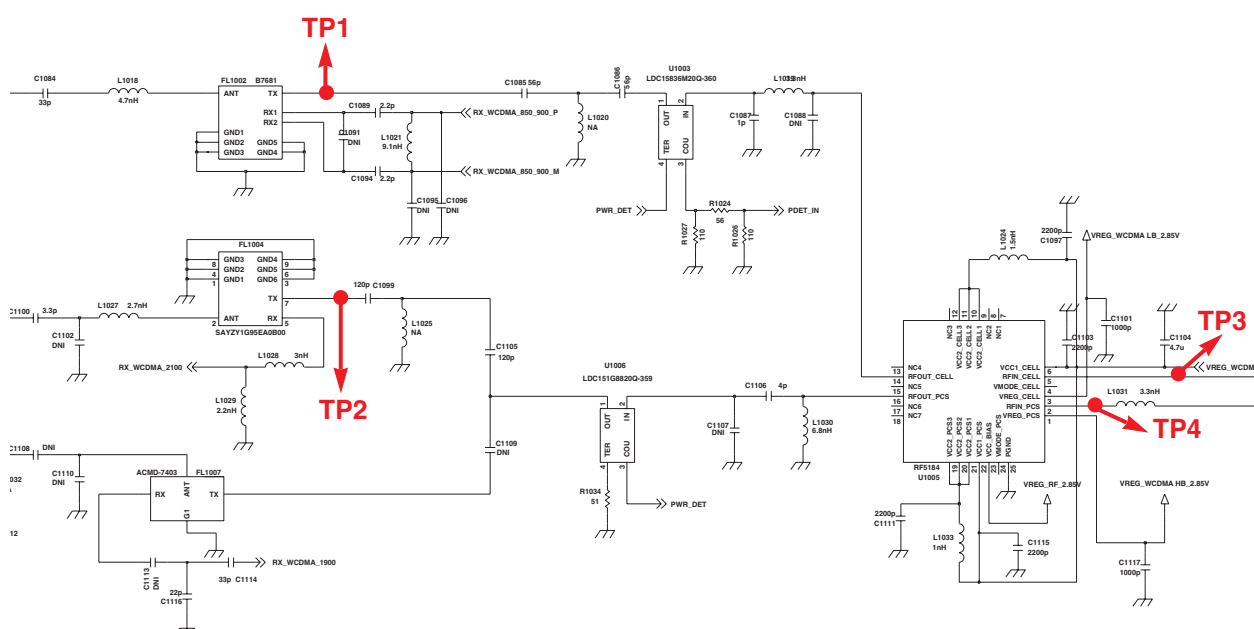
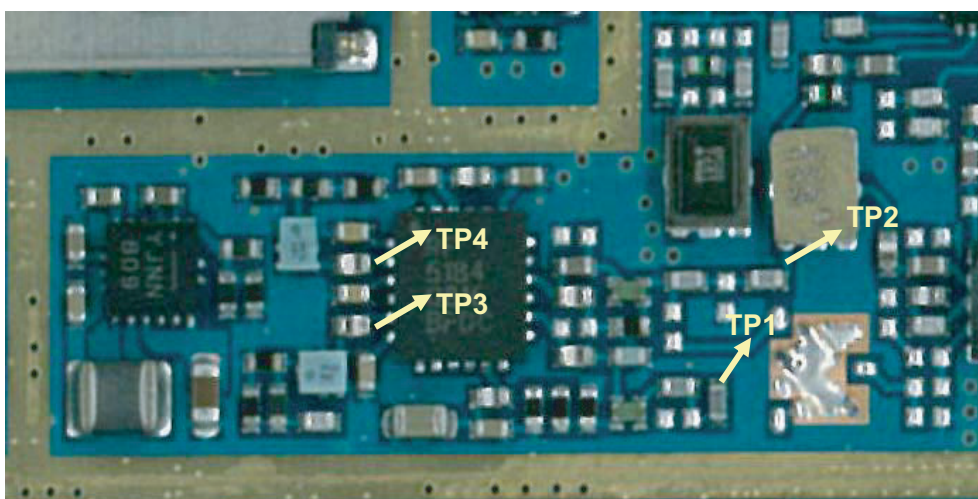


**PAM IN/OUT Signal :**

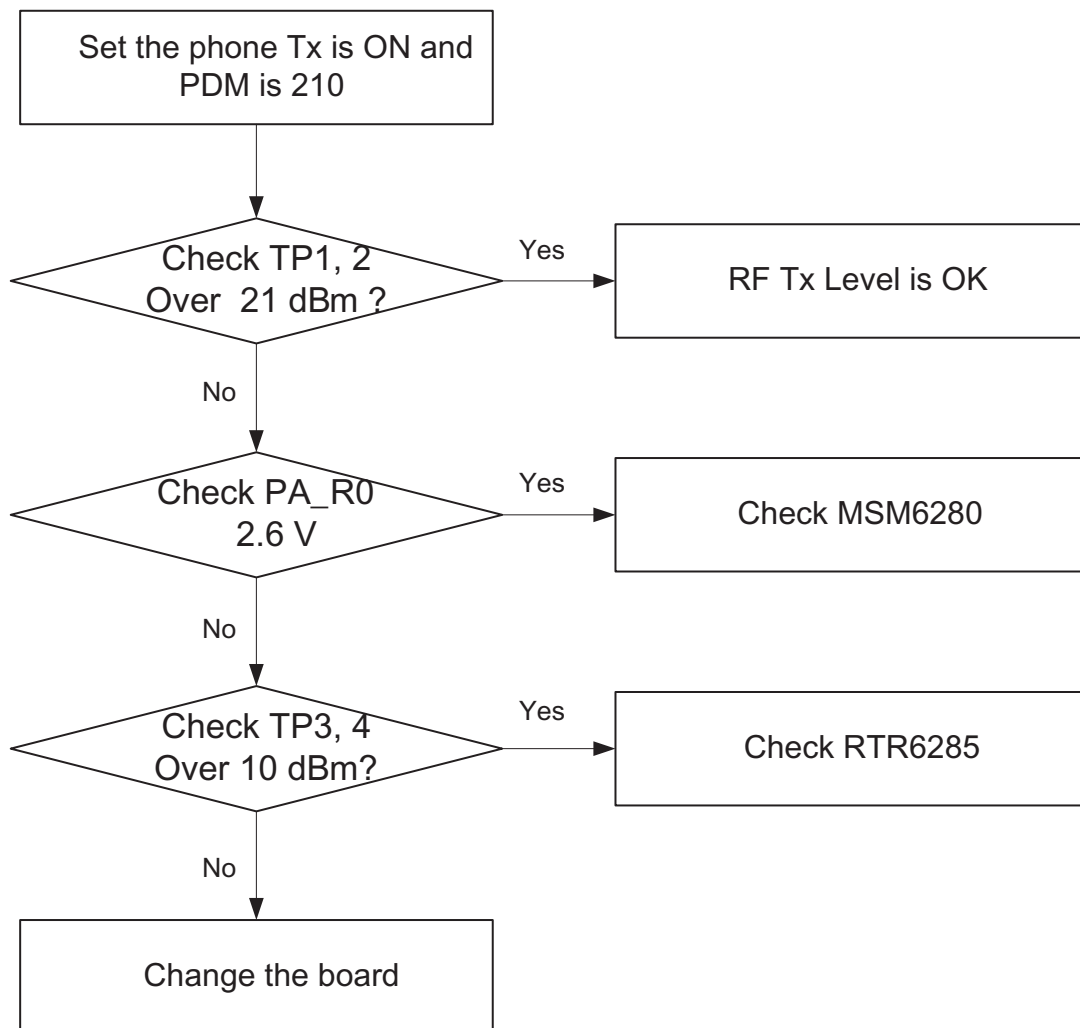
When PAM is under the operation of high power mode (PA\_R0:High),

PAM OUT power must be over 21 dBm

PAM IN power must be under 10 dBm



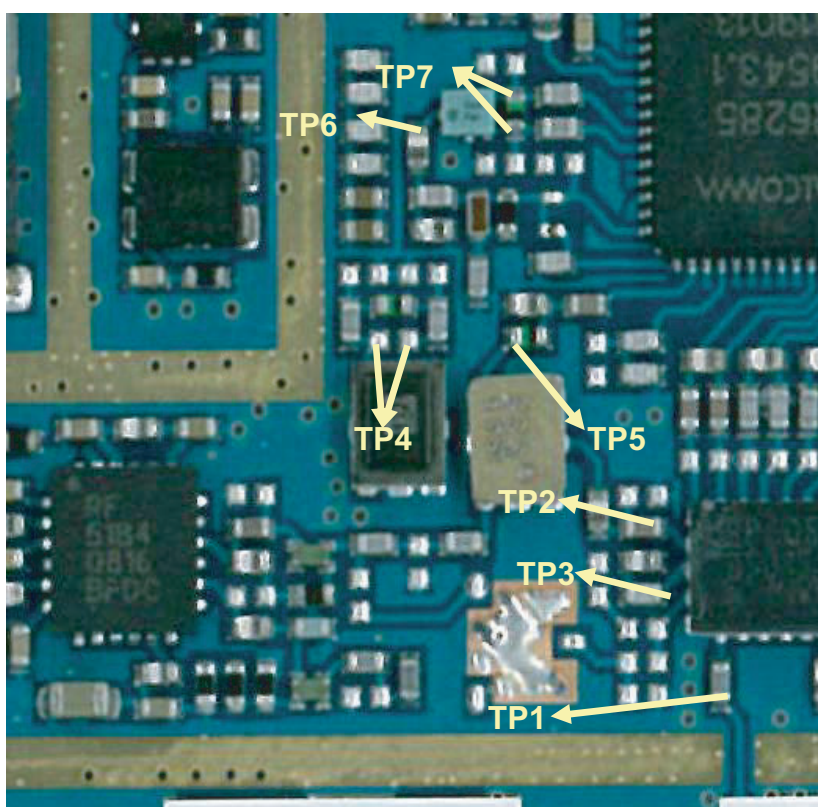
## 4. TROUBLE SHOOTING



## 4. TROUBLE SHOOTING

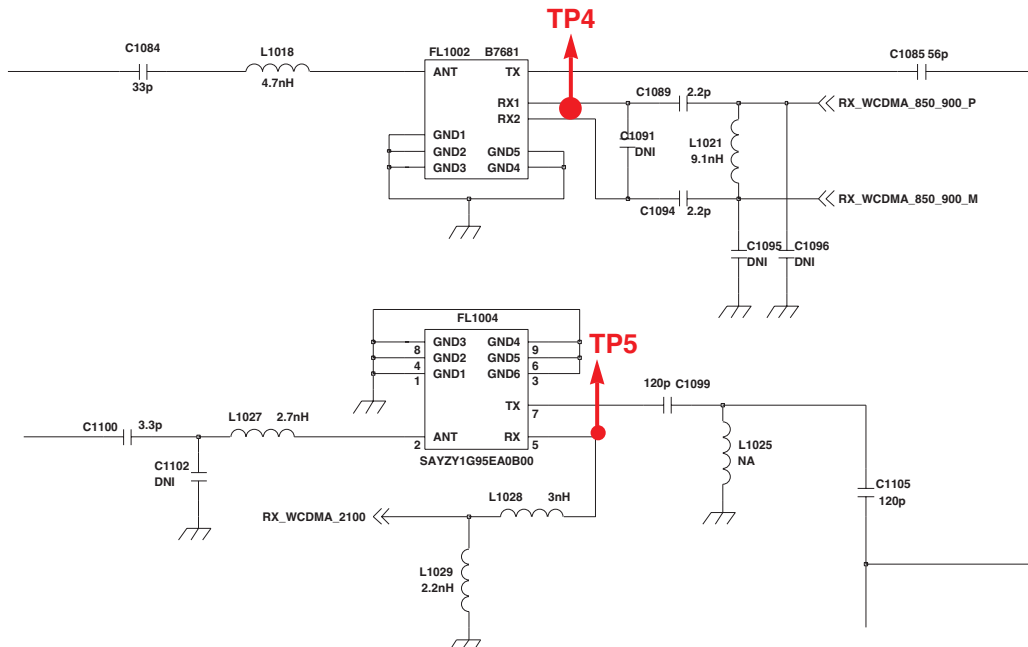
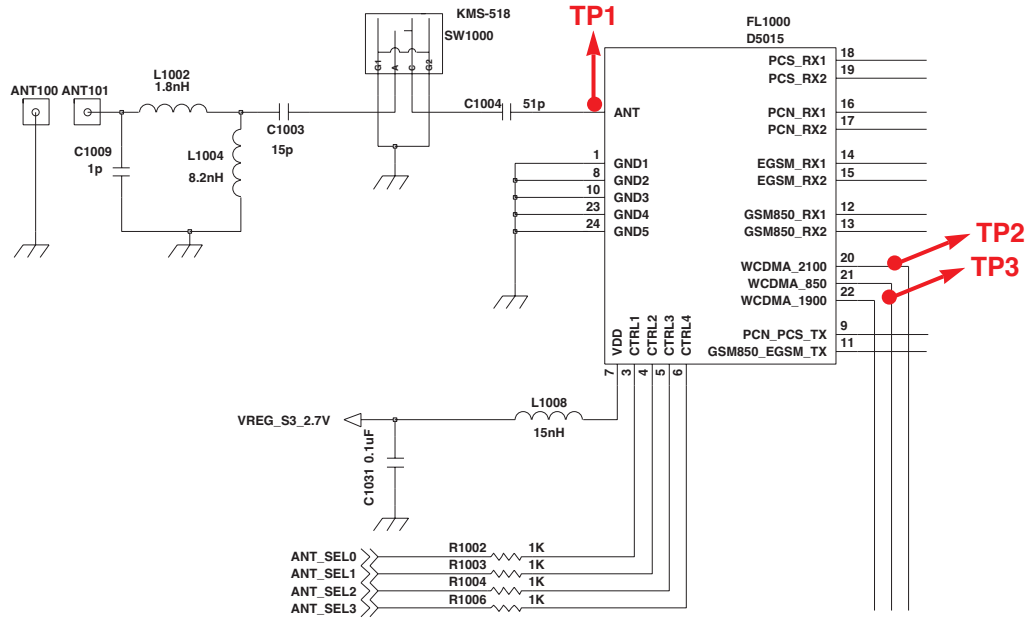
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### 4.5.5 Checking RF Rx Level

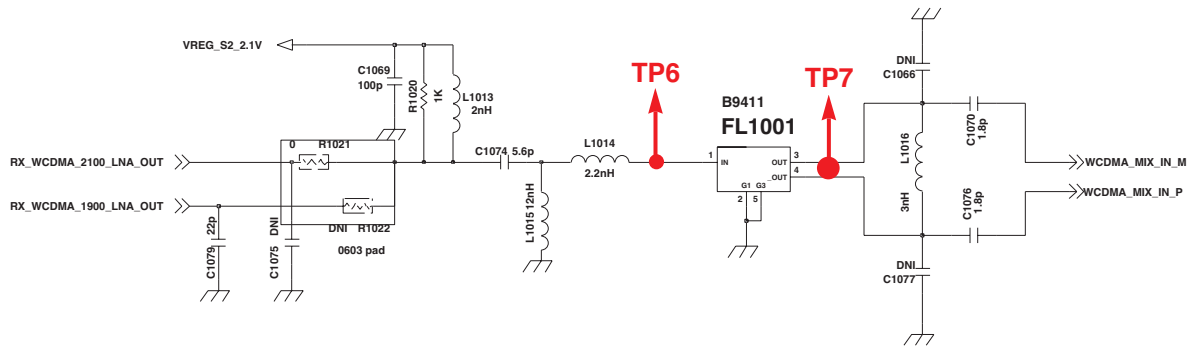


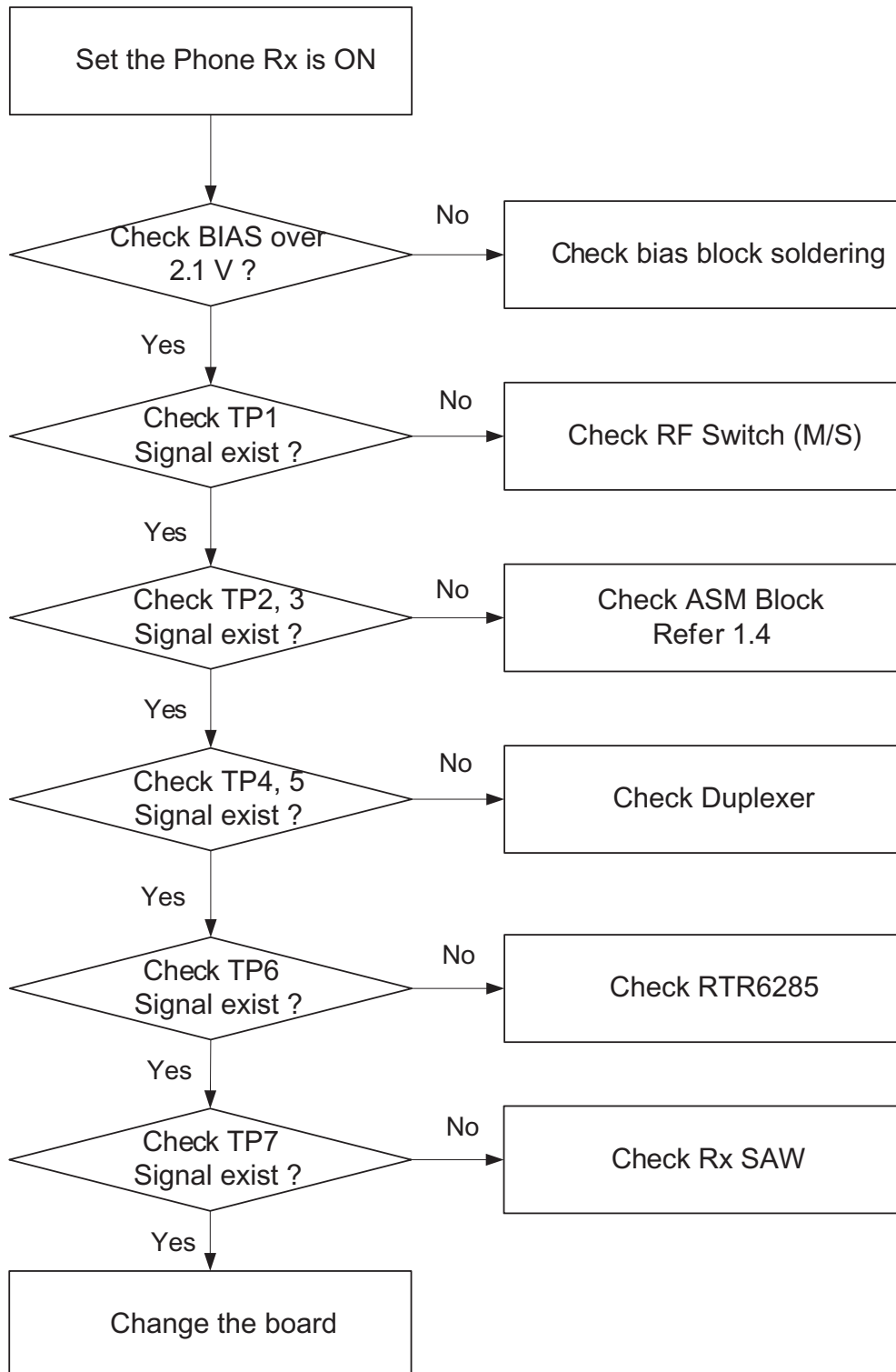
Test Point (RF Rx Level)

## 4. TROUBLE SHOOTING



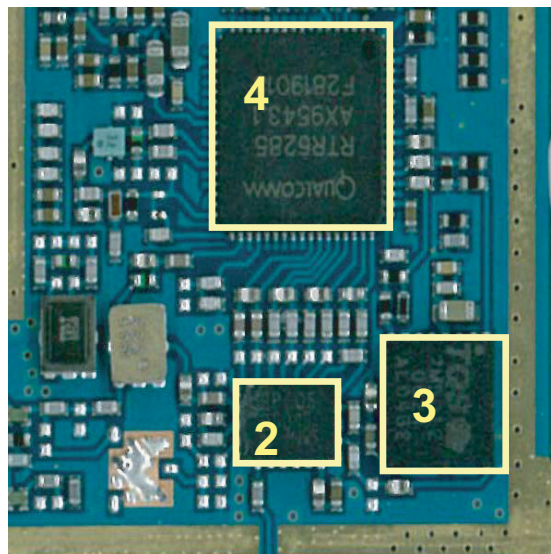
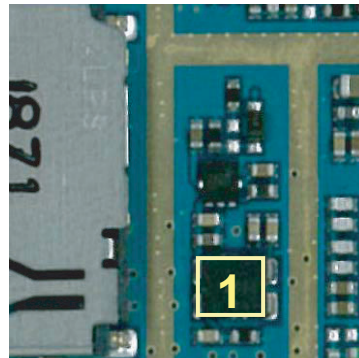
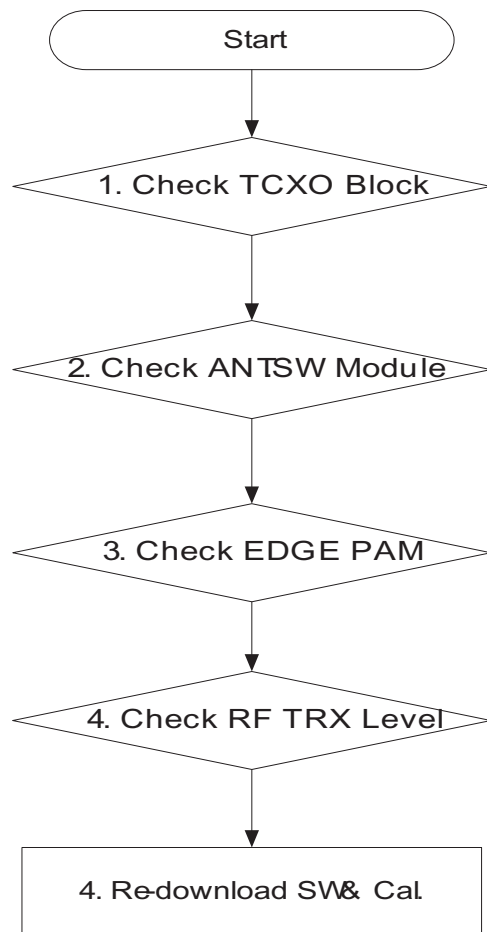
## 4. TROUBLE SHOOTING





## 4. TROUBLE SHOOTING

### 4.6 Checking GSM Block





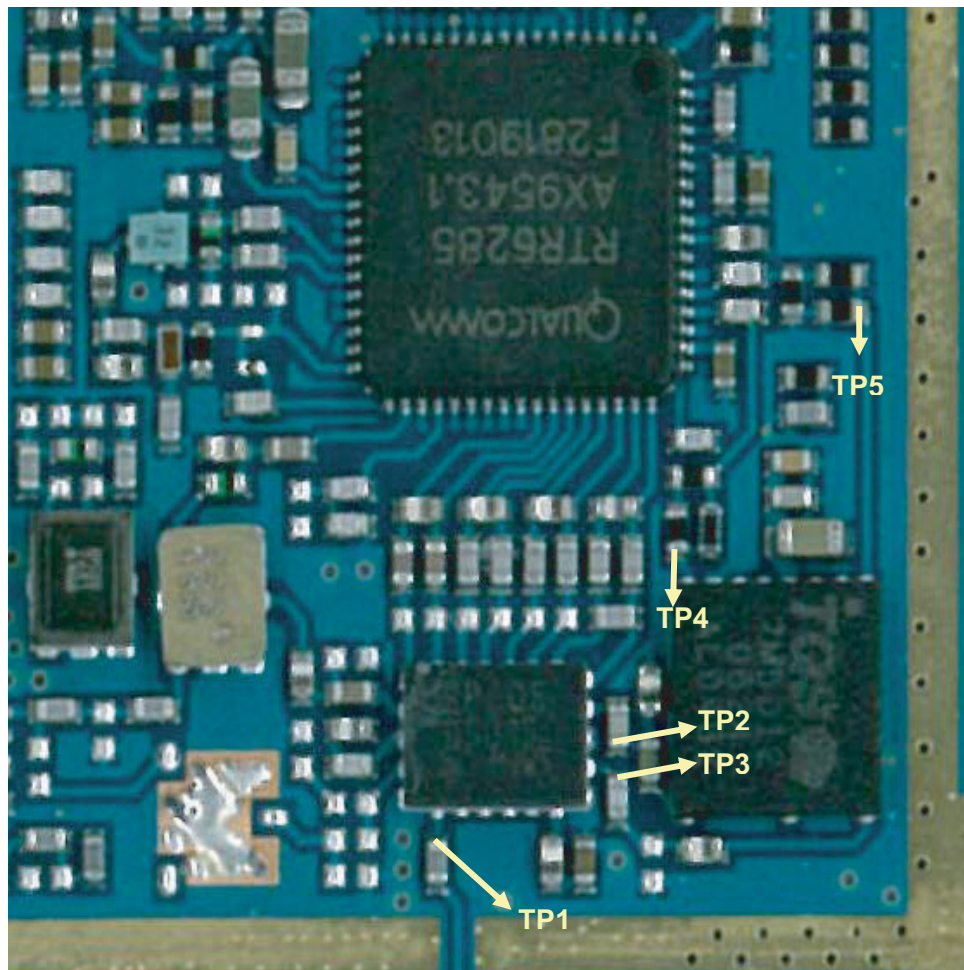
### 4.6.1 Checking TCXO Block

Refer to 1.3

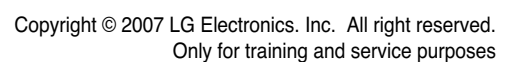
### 4.6.2 Checking ASM Block

Refer to 1.4

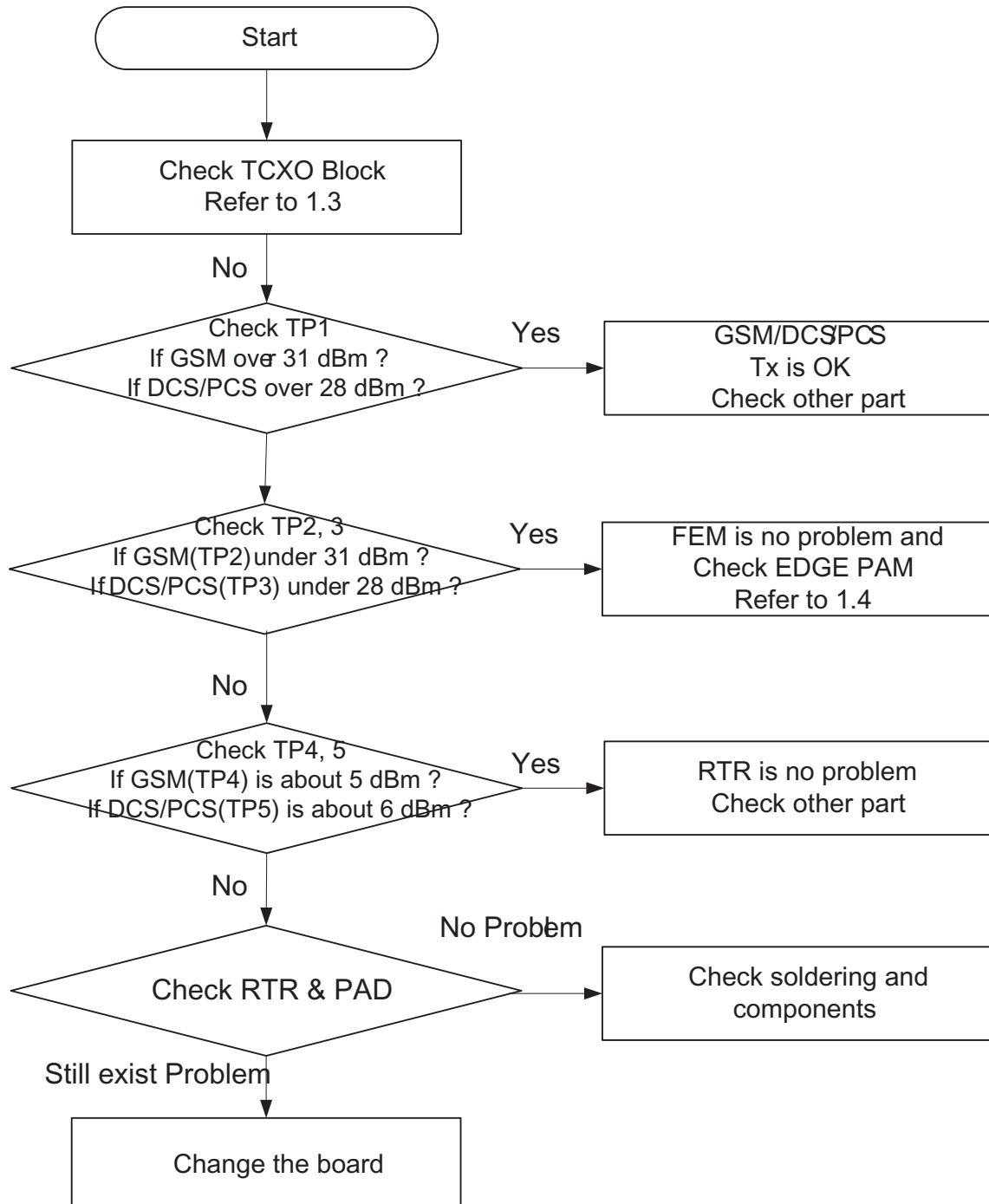
#### 4.6.3.1 Checking RF Tx level





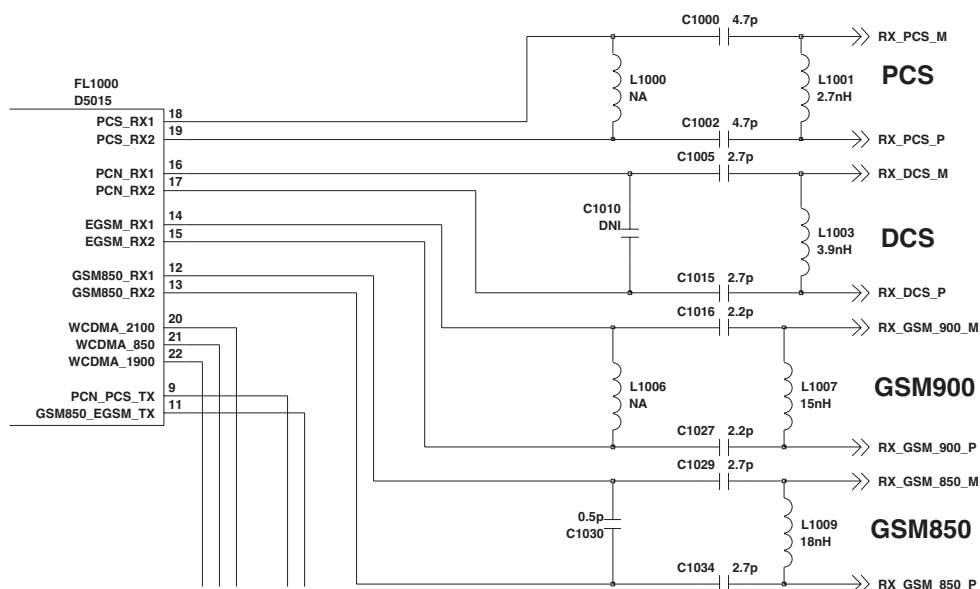
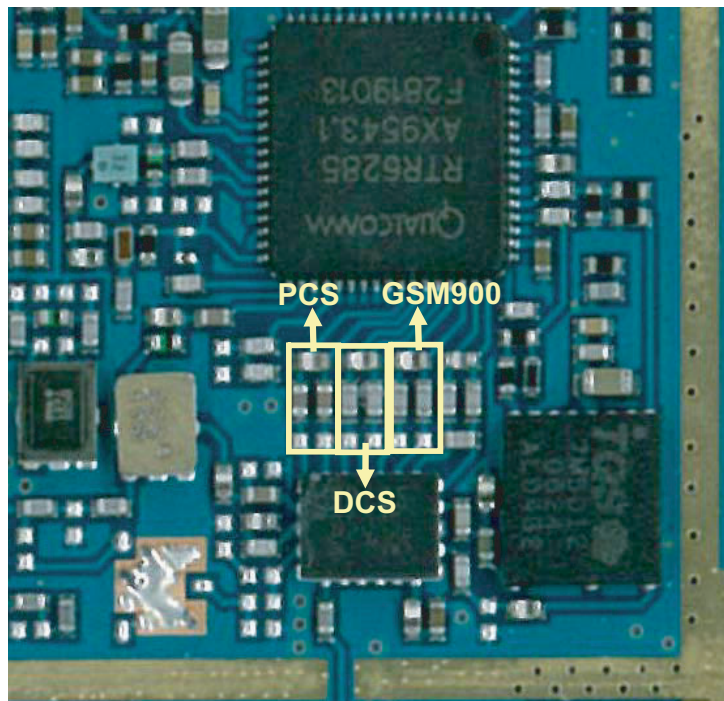


## 4. TROUBLE SHOOTING



## 4. TROUBLE SHOOTING

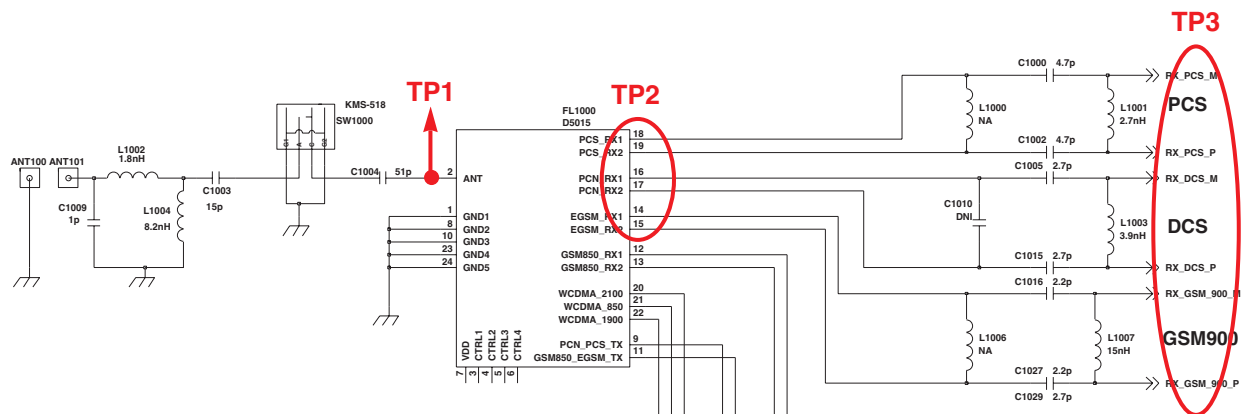
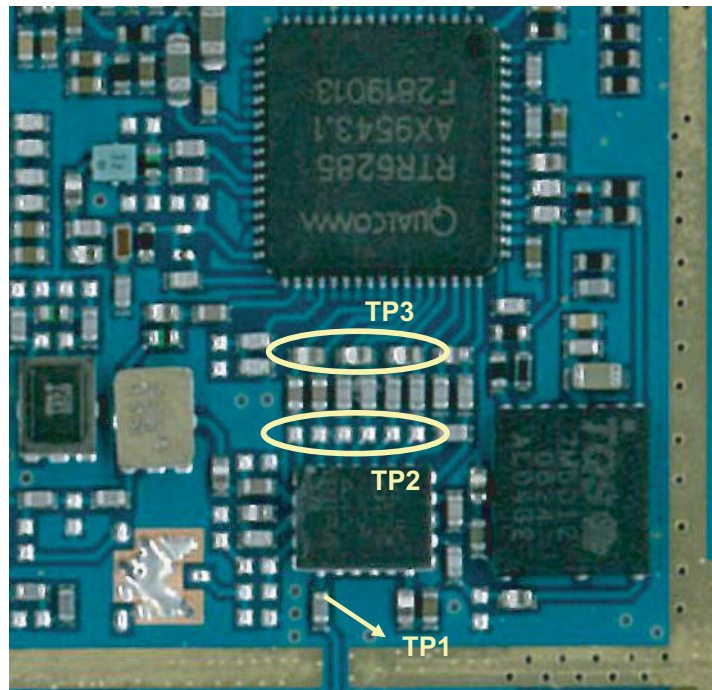
### 4.6.3.2 Checking RF Rx Block



Schematic of GSM/DCS/PCS Rx Block

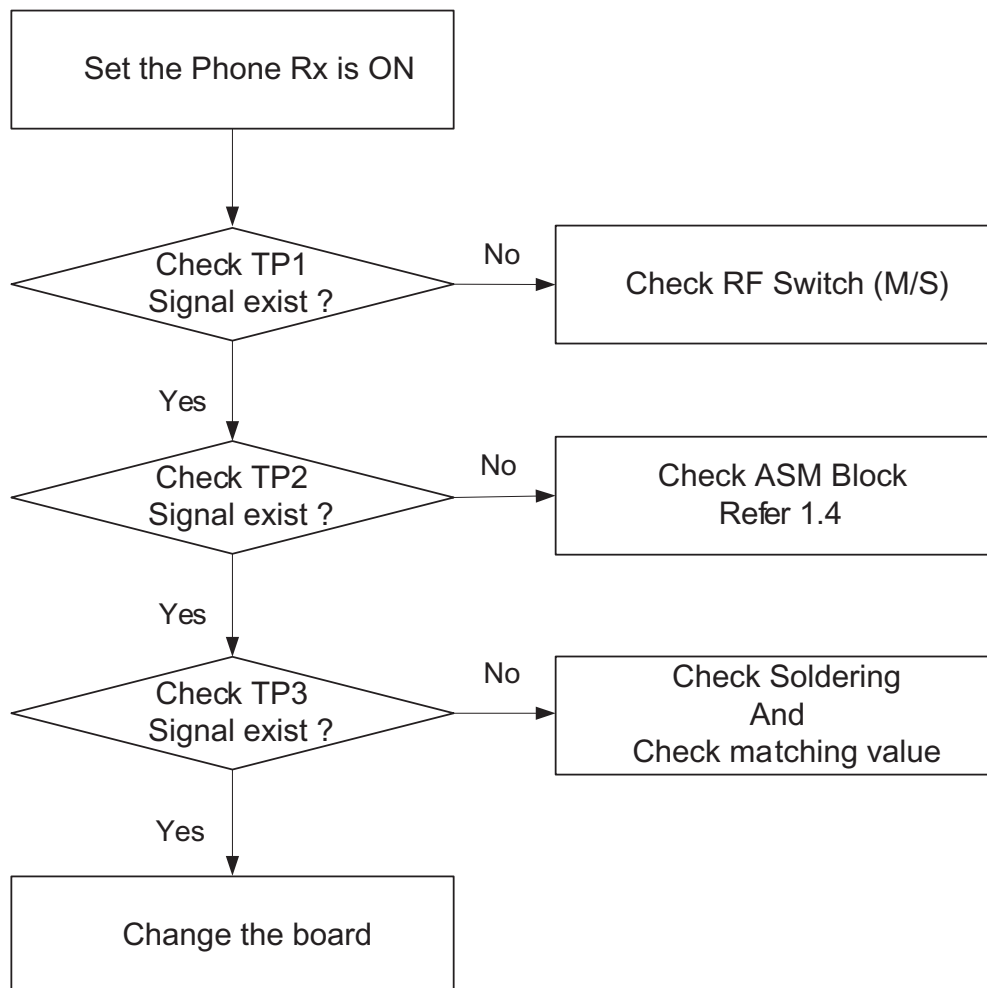
## 4. TROUBLE SHOOTING

### 4.6.3.3 Checking RF Rx Block

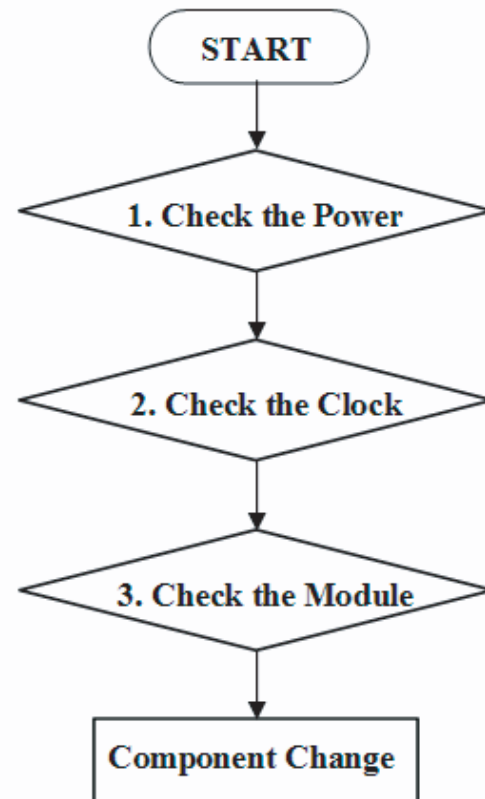
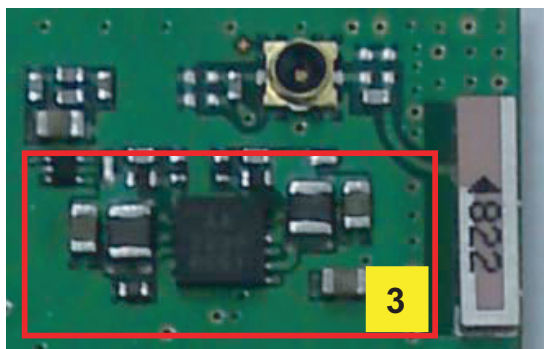
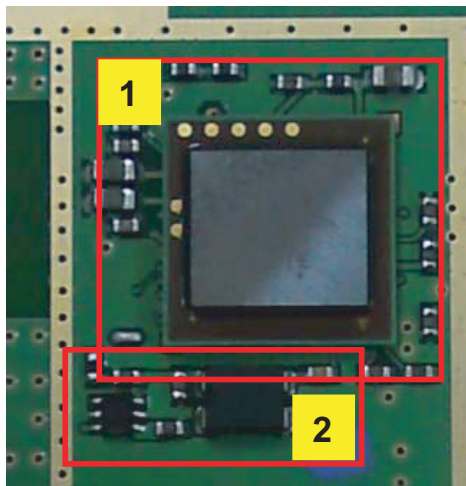


## 4. TROUBLE SHOOTING

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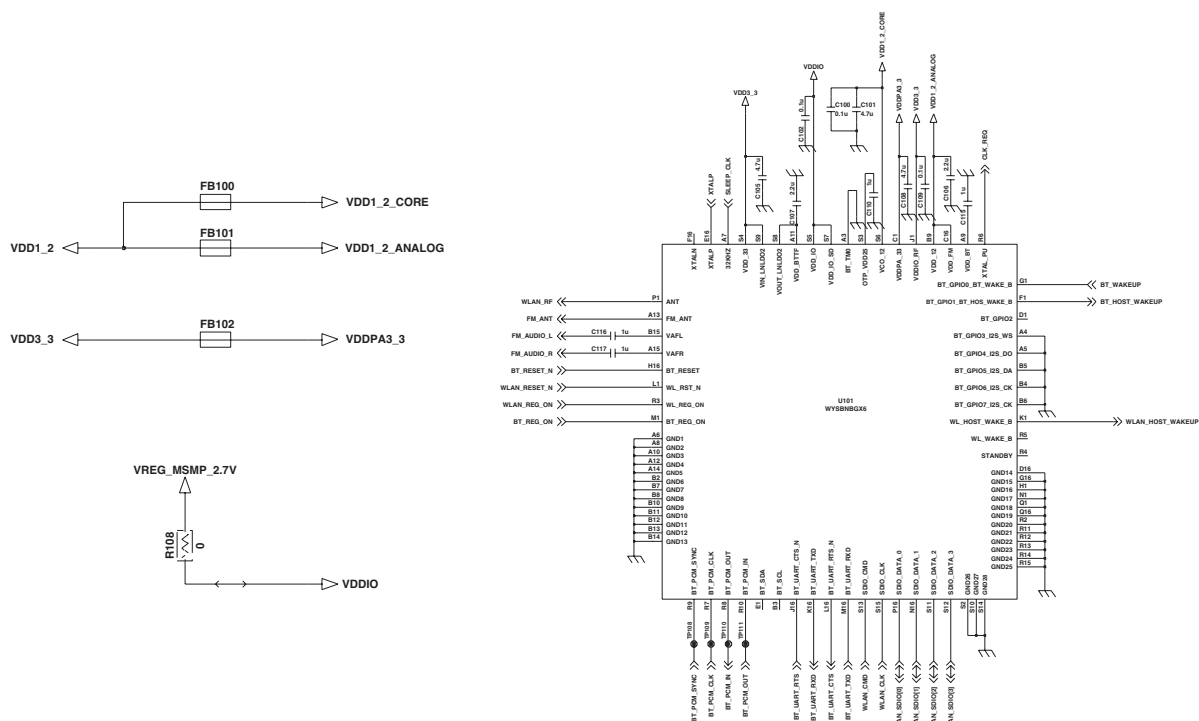


### 4.7 WLAN/BT/FM Block

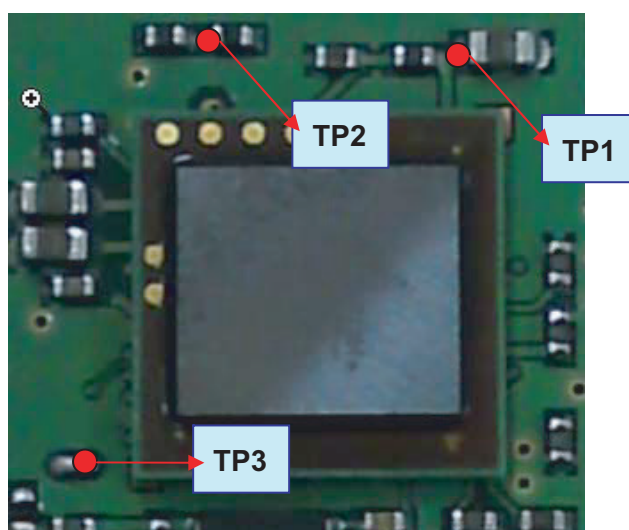


## 4. TROUBLE SHOOTING

### 4.7.1 Module Part



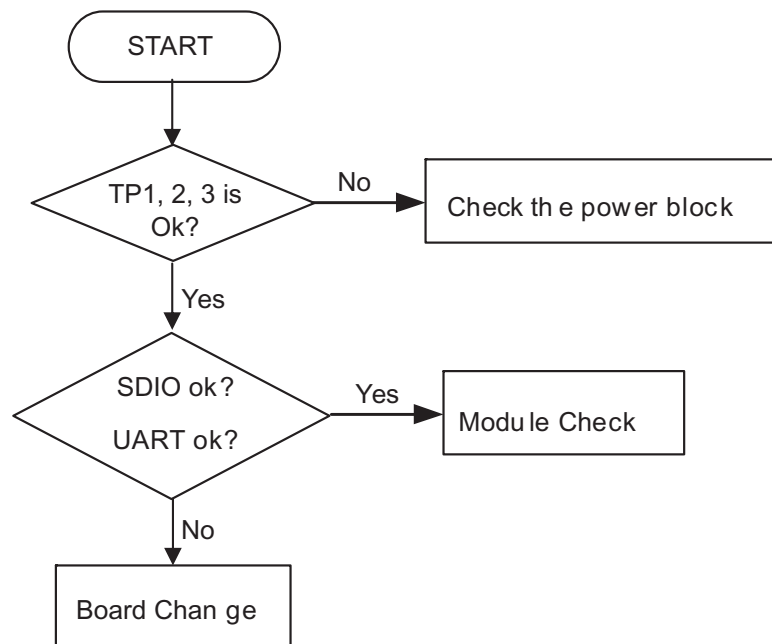
### Schematic of WLAN/BT/FM Module



### Test Point of Rx Block

## 4. TROUBLE SHOOTING

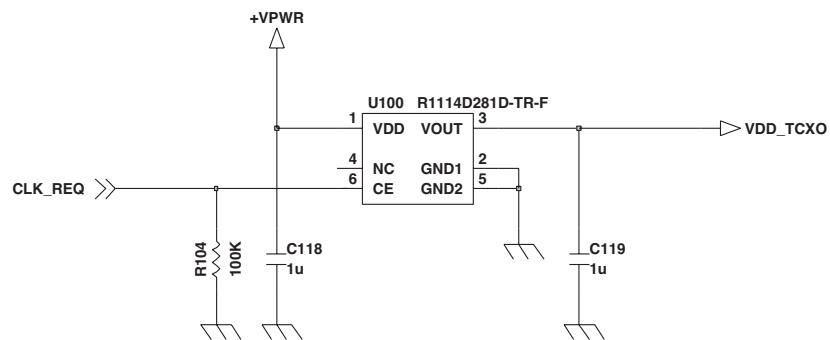
Test Point	Net name	Description
TP1	VDD3_3	Power for i nternal PA and RF interfaces (3.3V)
TP2	VDD1_2	Power for WLAN/BT/F M BB co re and AFE/PLL(1.2V)
TP3	VREG_MSMP_ 2.7V	Power for h ost interface (2.7V)



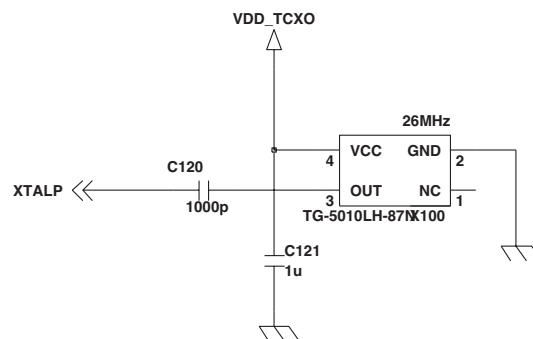


## 4. TROUBLE SHOOTING

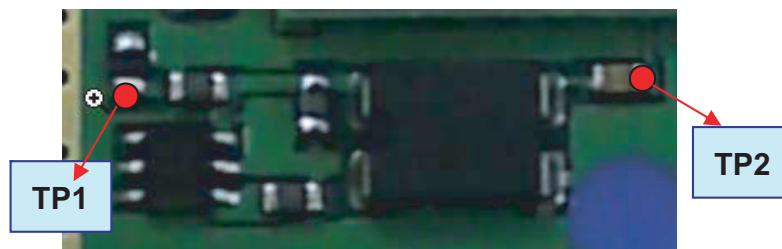
### 4.7.2 Main Clock Part



**26MHz TCXO**



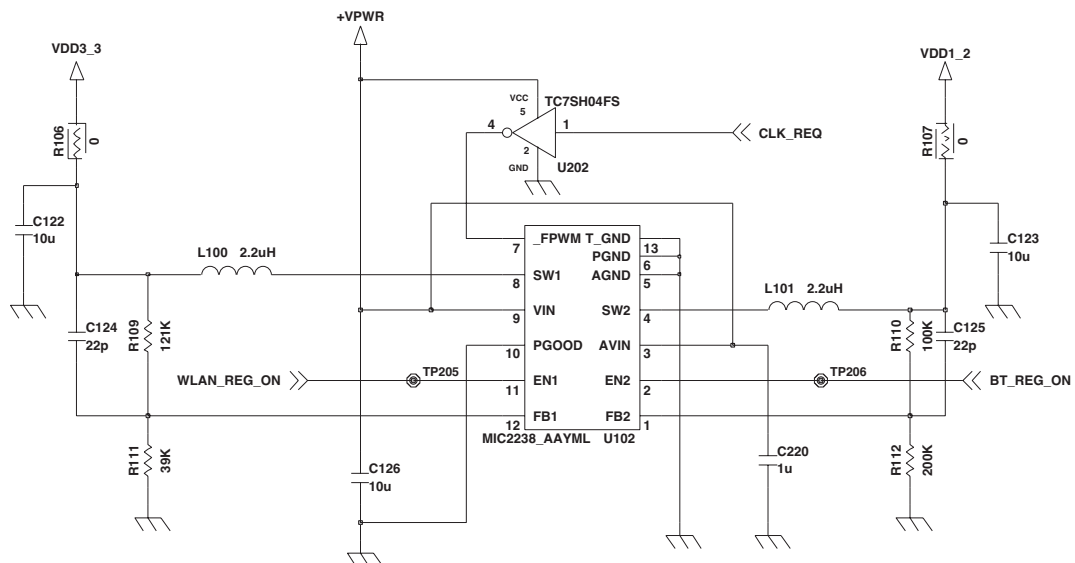
**Schematic of TCXO Part**



## 4. TROUBLE SHOOTING

Test Point	Net name	Description
TP1	CLK_REQ	On/Off Control external clock source 0 : TCXO off 1 : TCXO on
TP2	XTALP	TCXO output clock : 26MHz

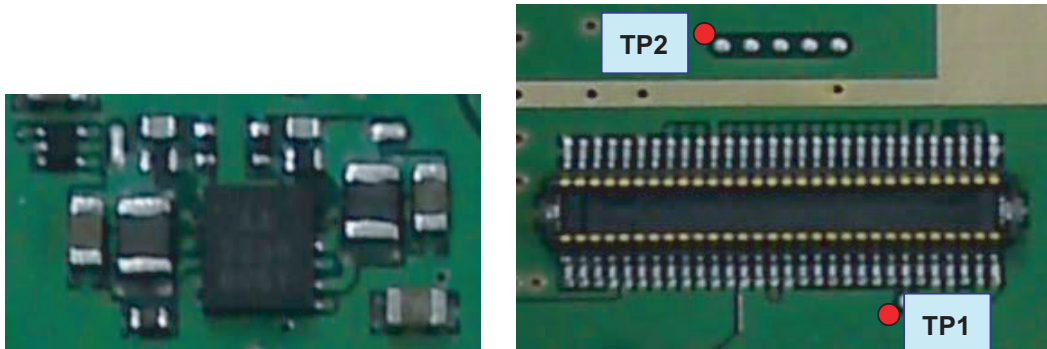
### Test Point of TCXO



### Schematic of power block

## 4. TROUBLE SHOOTING

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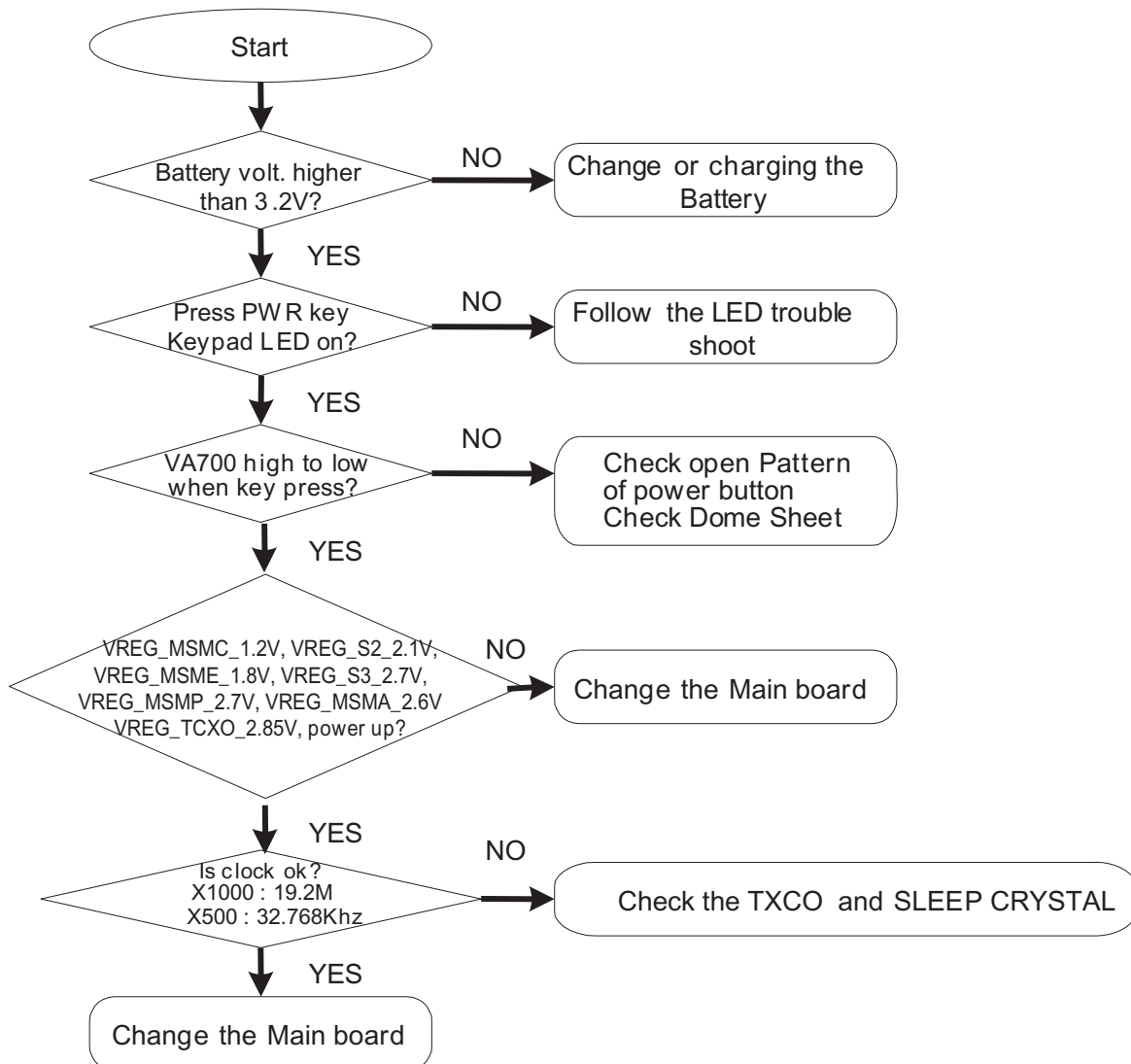
**Test Point of P**

Test Point	Net name	Description
TP1	WLAN_REG_ON	3.3V on/off control signal 0 : off 1 : on The WiFi/BT function is controlled by this signal.
TP2	BT_REG_ON	1.2V on/off control signal The KC910 is always on when the phone boots up. If low, check the MSM6280.

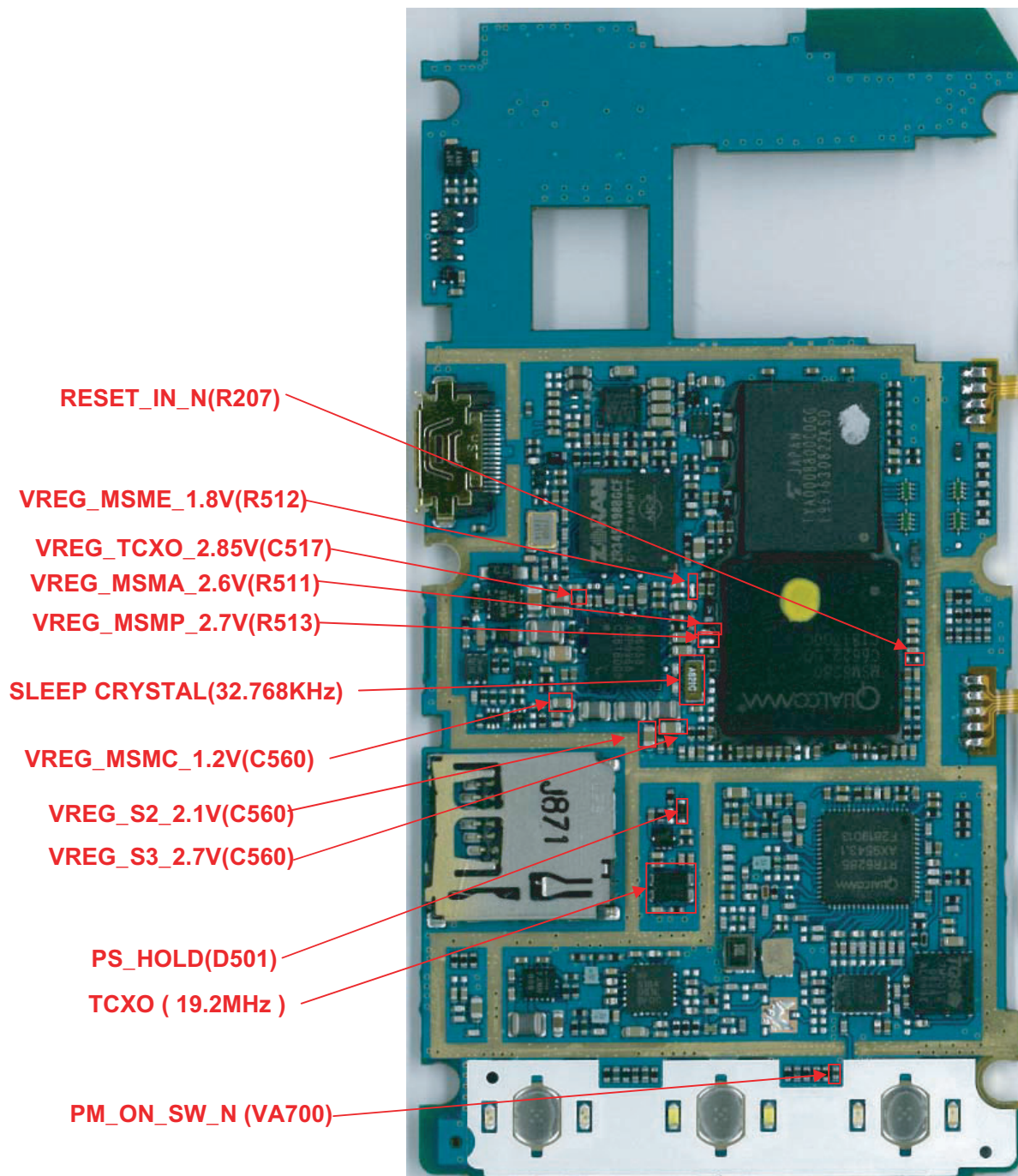
### 4.8 Power on trouble

Power on sequence of KC910 is :

PWR key press → PM\_ON\_SW\_N go to low (VA700, PM6658 KPD\_PWR\_N pin#L4) → PM6658 Power Up → VREG\_MSMC\_1.2V(C506), VREG\_S2\_2.1V(C509), VREG\_MSME\_1.8V (R512), VREG\_S3\_2.7V(C511), VREG\_MSMP\_2.7V(R513), VREG\_MSMA\_2.6V(R11), VREG\_TCXO\_2.85V(C517) power up → PON\_RESET\_N assert to MSM → Phone booting & PS\_HOLD(D501) assert High to PMIC(PM6658)



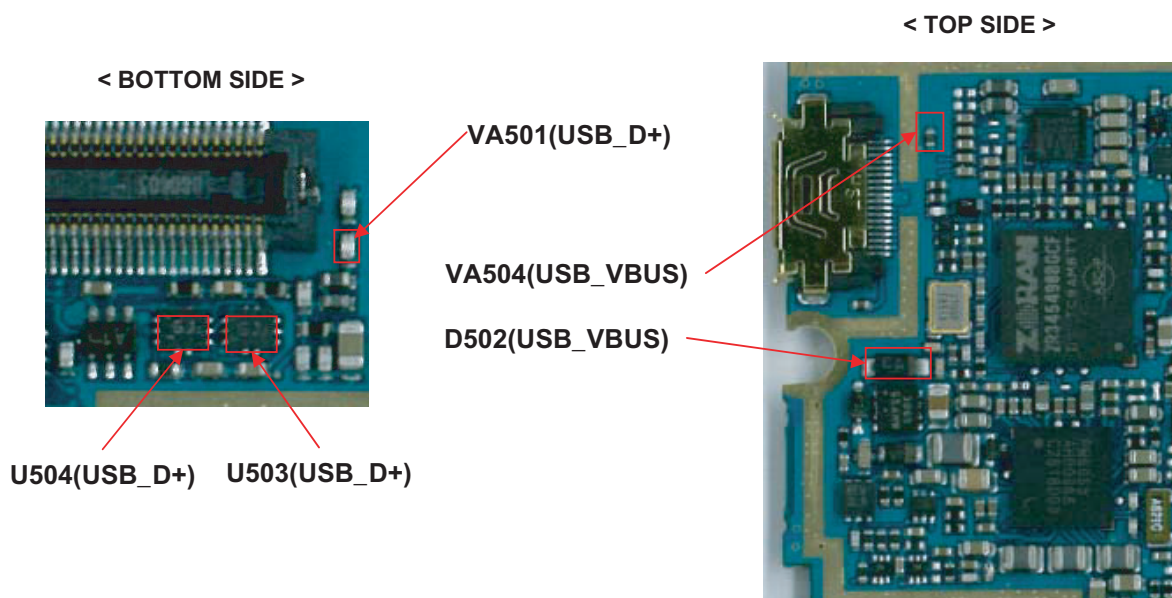
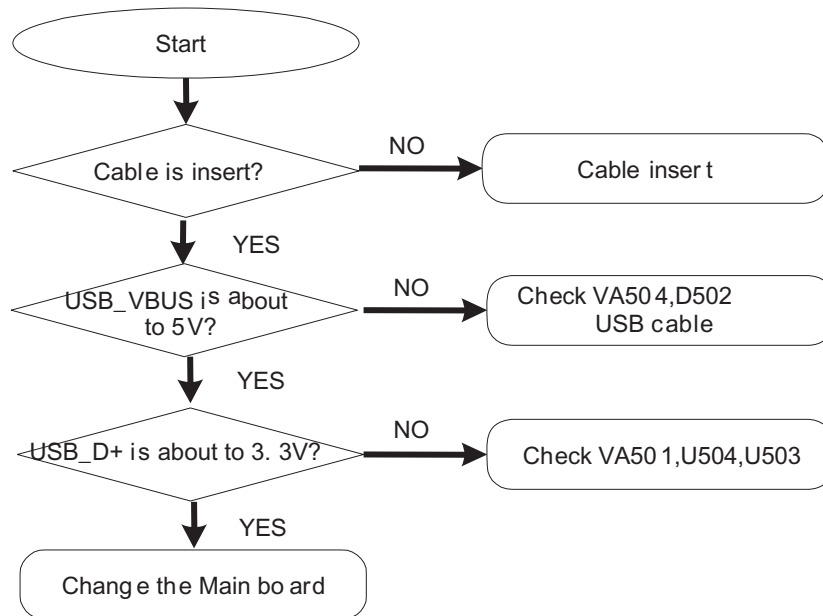
## 4. TROUBLE SHOOTING



### 4.8.1 USB trouble

USB Initial sequence of KC910 is :

USB connected to KC910 → USB\_VBUS(D502) go to 5V → USB\_D+(VA501) go to 3.3V →  
USB\_DATA is triggered → USB work



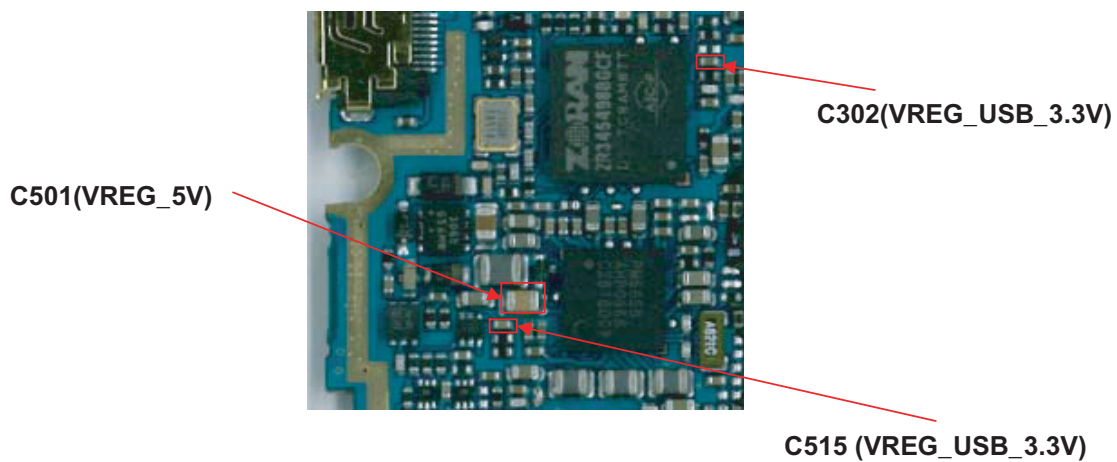
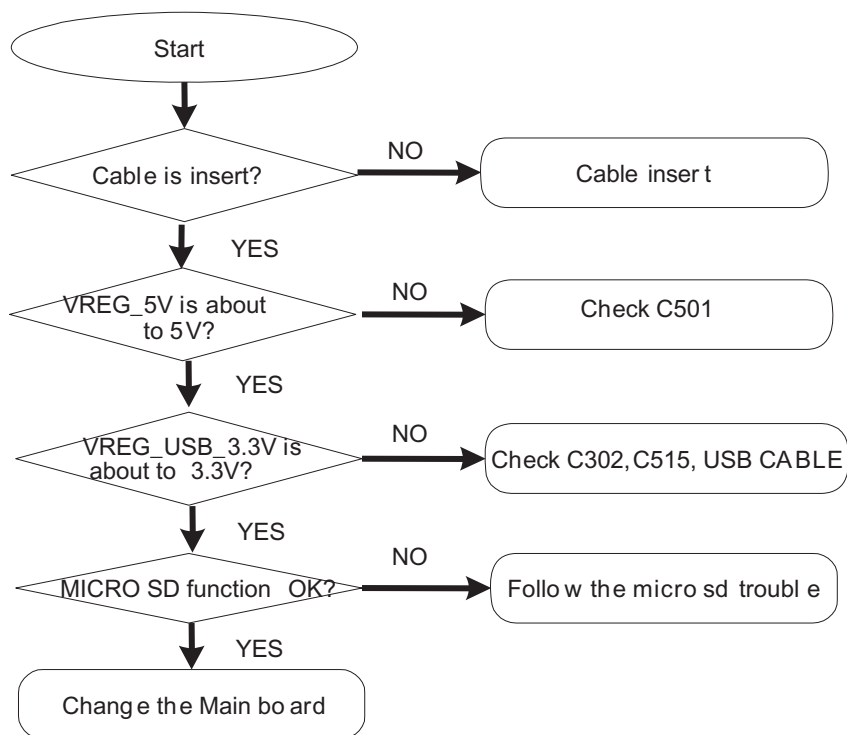
## 4. TROUBLE SHOOTING

### 4.8.2 UMS(USB MASS STORAGE) trouble

UMS Initial sequence of KC910 is :

USB connected to KC910 → VREG\_5V(C501, UMS) go to 5V → VREG\_USB\_3.3V(C515) go to 3.3V

→ USB\_DATA is triggered → USB work

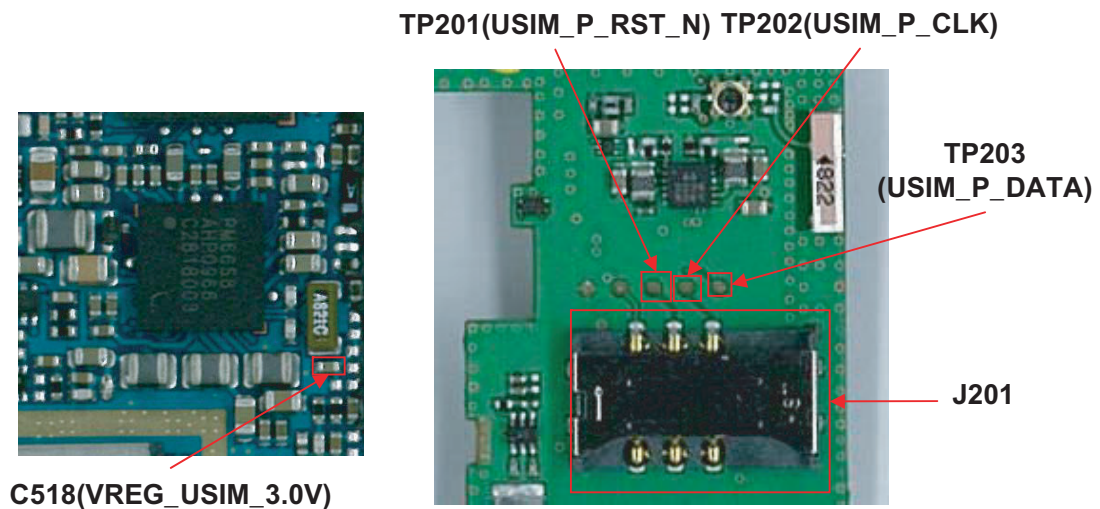
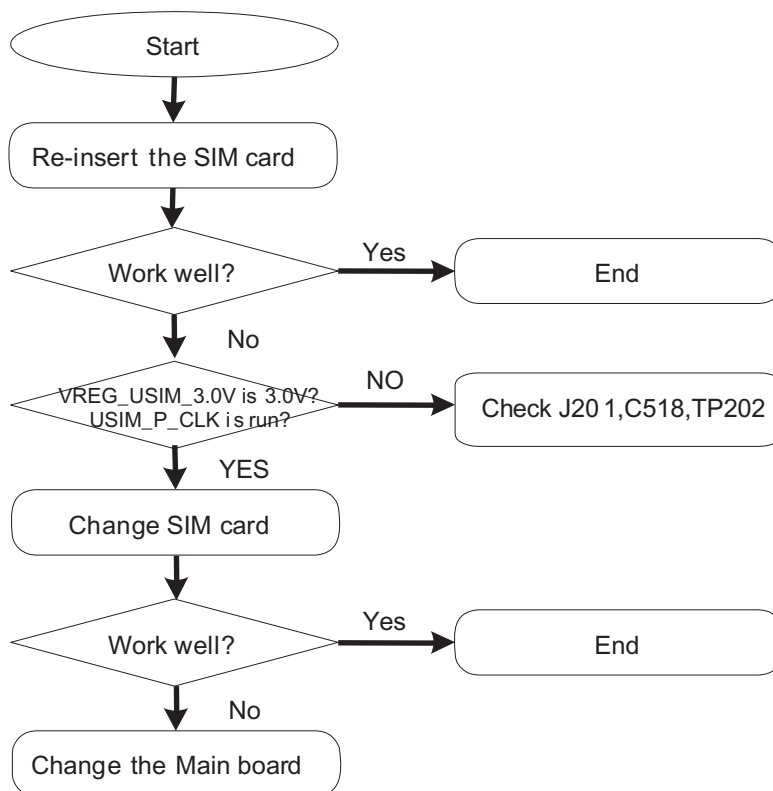




### 4.9 SIM detect trouble

USB Initial sequence of KC910 is :

VREG\_USIM\_3.0V(C518 of PM6658) go to 3.0V → USIM clock, reset and data triggered → USIM IF work (Schematic and place are refer to SIM technical brief)



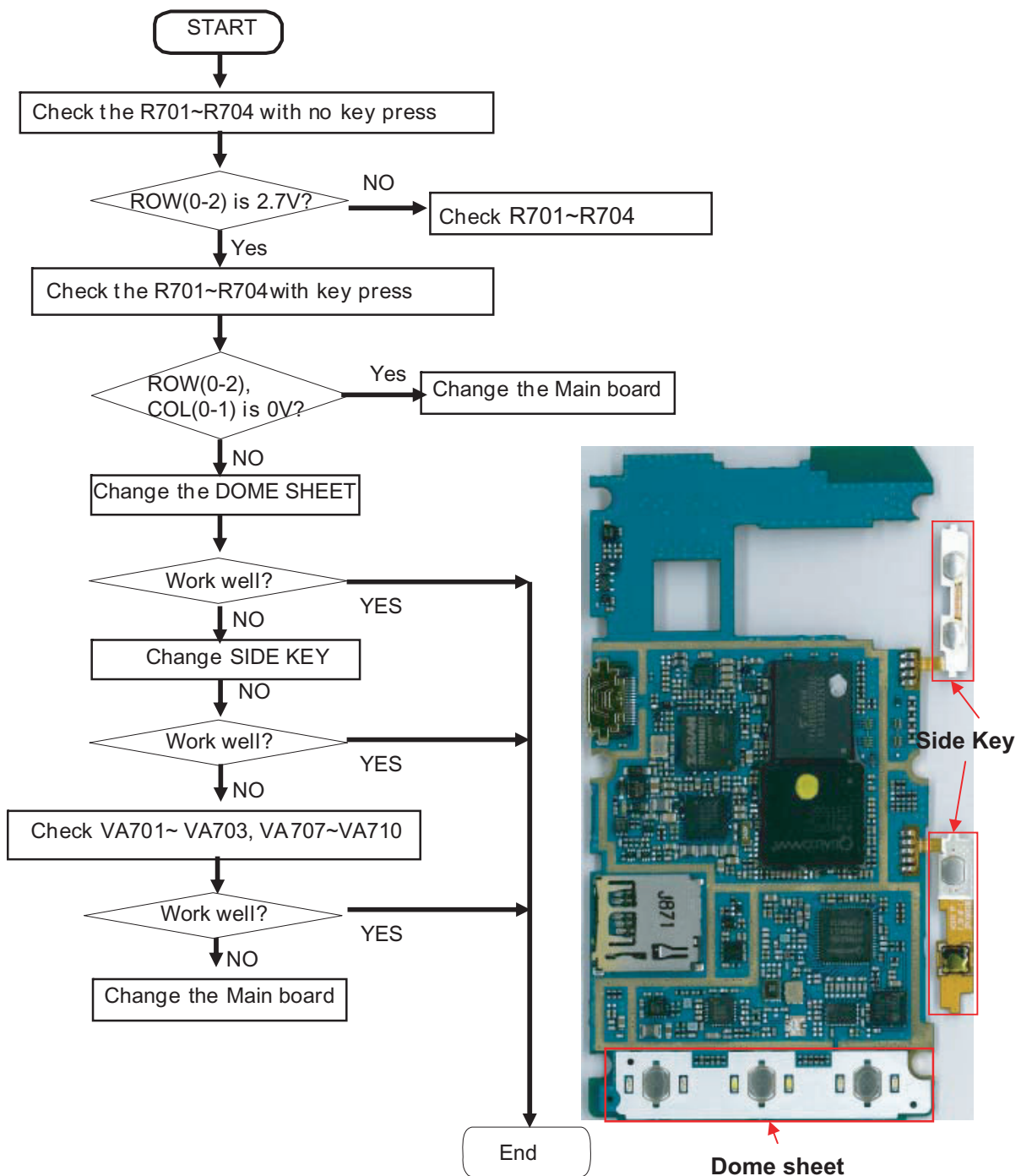


## 4. TROUBLE SHOOTING

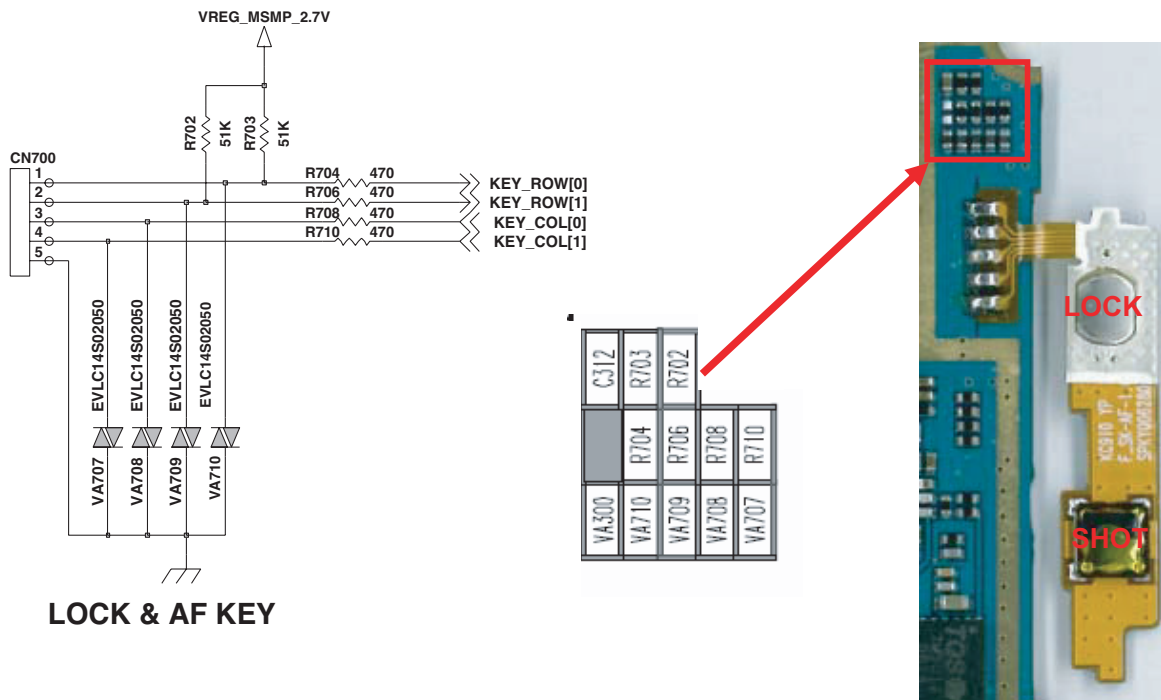
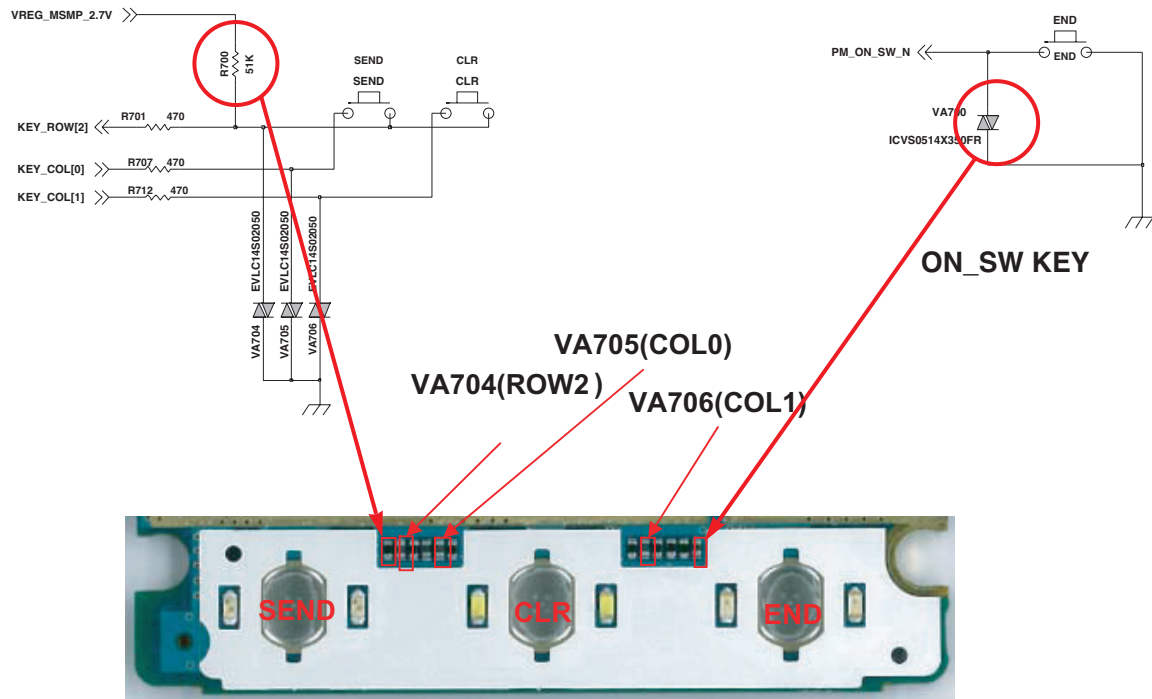
### 4.10 Key sense trouble ( KEYPAD )

Key Sense sequence of KC910 is :

Default condition ROW(0-2) is 2.7V → Press the key → Corresponding ROW(x) and COL(x) go to 0V  
→ Scan pulse( Col → Row ) → MSM sense what key pressed.

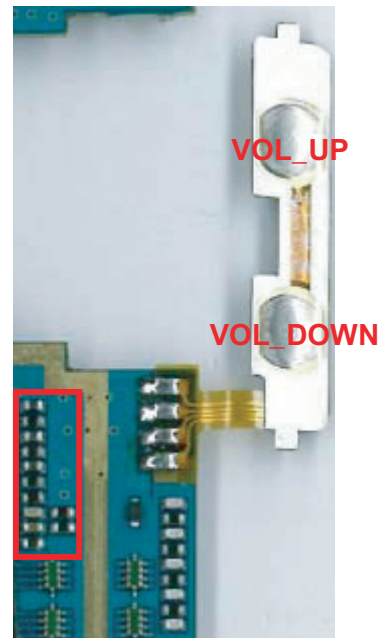
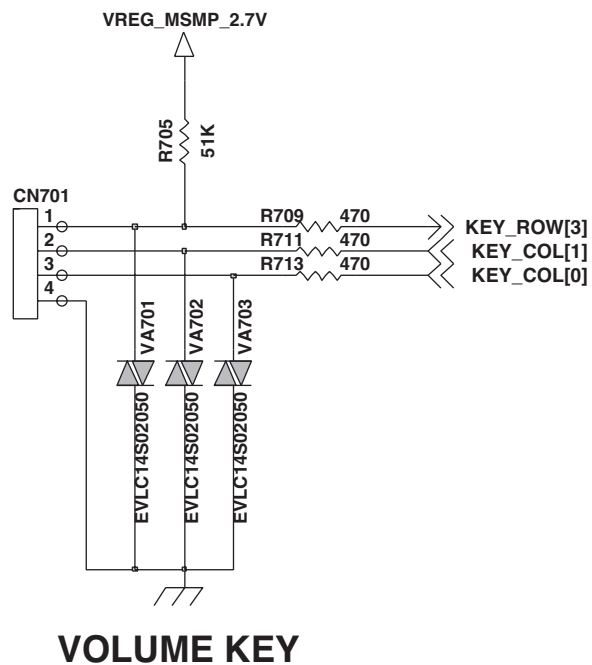


## 4. TROUBLE SHOOTING



Schematic of key sense part

## 4. TROUBLE SHOOTING



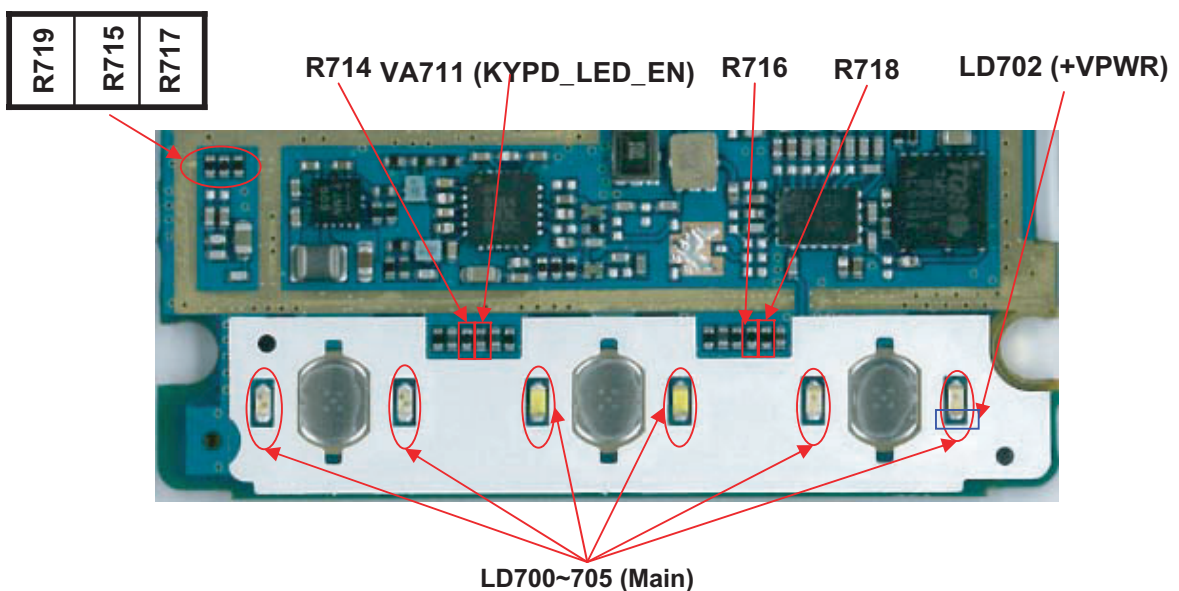
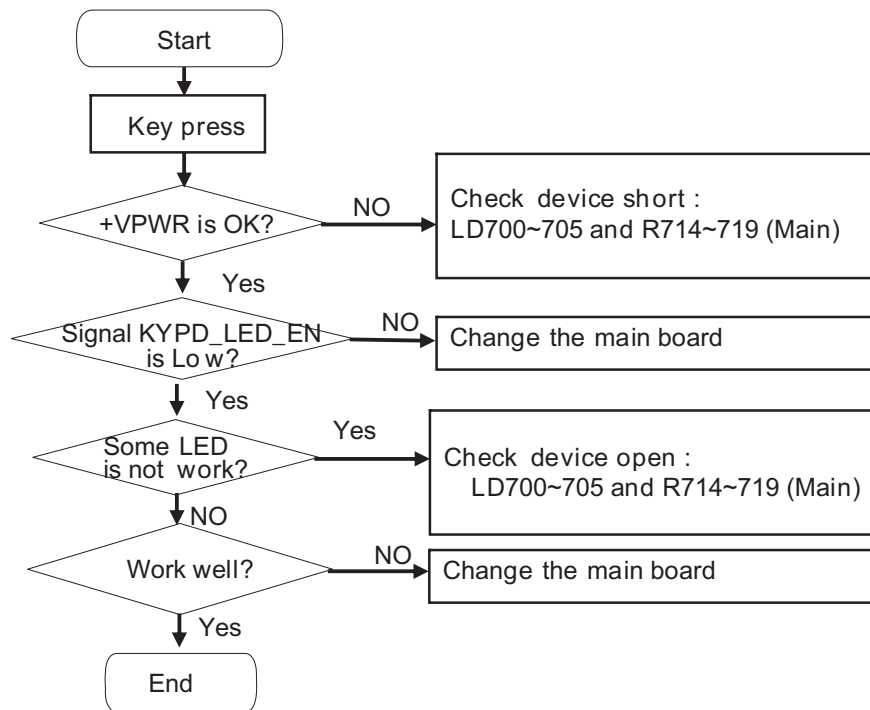
VA703	
R713	
VA702	
R711	
VA701	
R709	
R705	
C435	R402
C436	R401
R400	

Schematic of key sense part

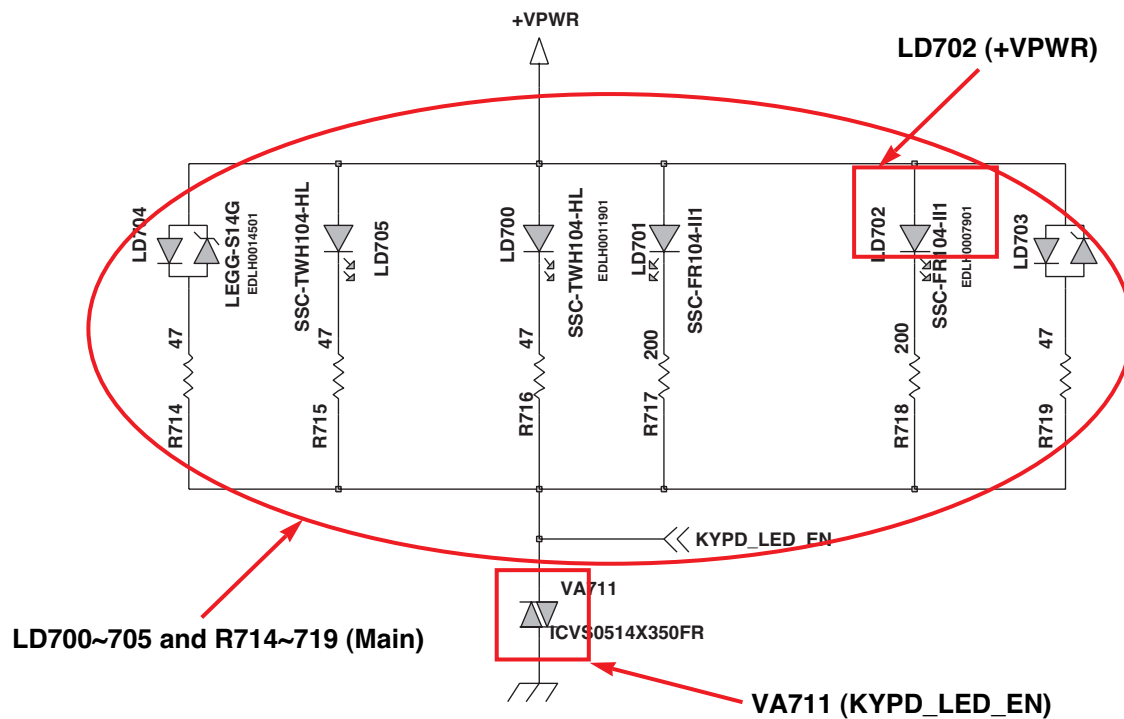
### 4.11 Keypad backlight trouble

Key Pad Back Light is on as below :

Key pressing → PM6658 KYPD\_LED\_EN go to Low → LED On (Key Pad LED controlled by PM6658)



## 4. TROUBLE SHOOTING



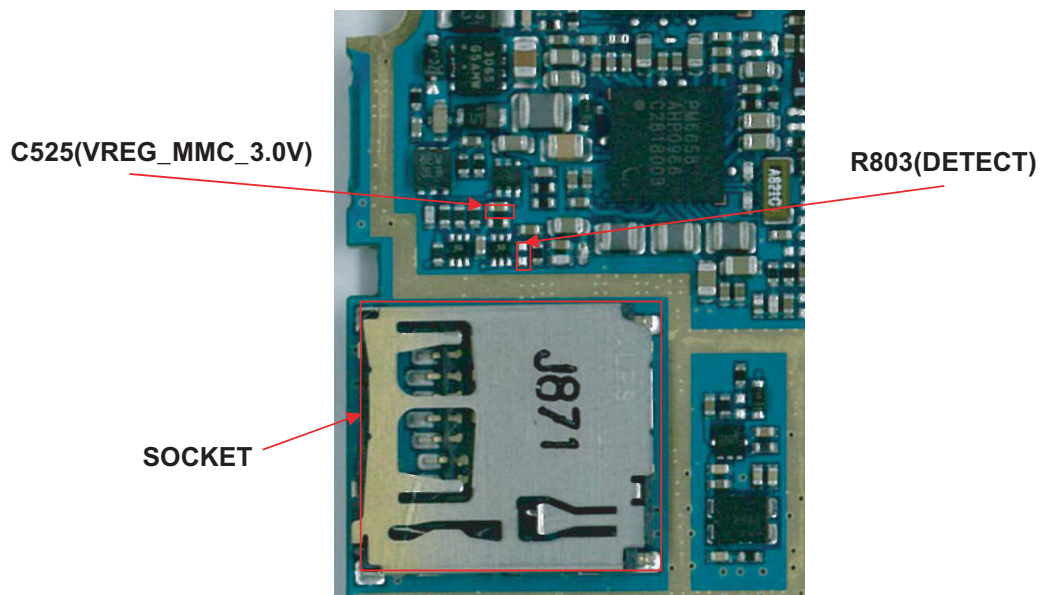
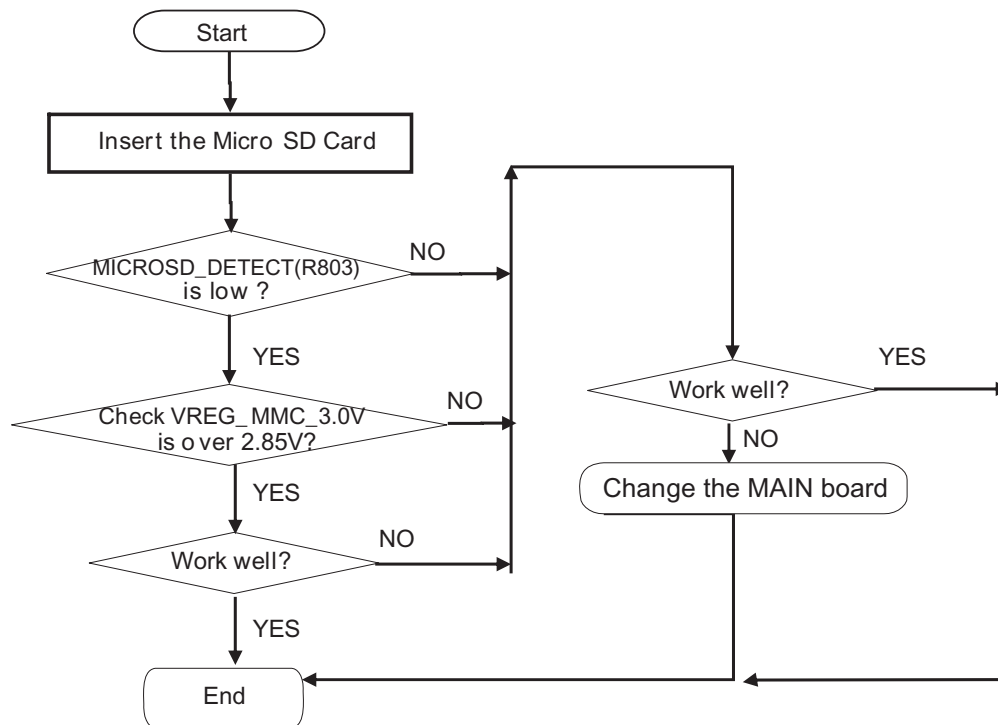
## KEY PCB BACKLIGHT LEDs

Schematic of keypad backlight part

### 4.12 Micro SD trouble

Micro SD is worked as below :

Micro SD insertion → MICROSD\_DETECT(R803) goes to low → go working



## 4. TROUBLE SHOOTING

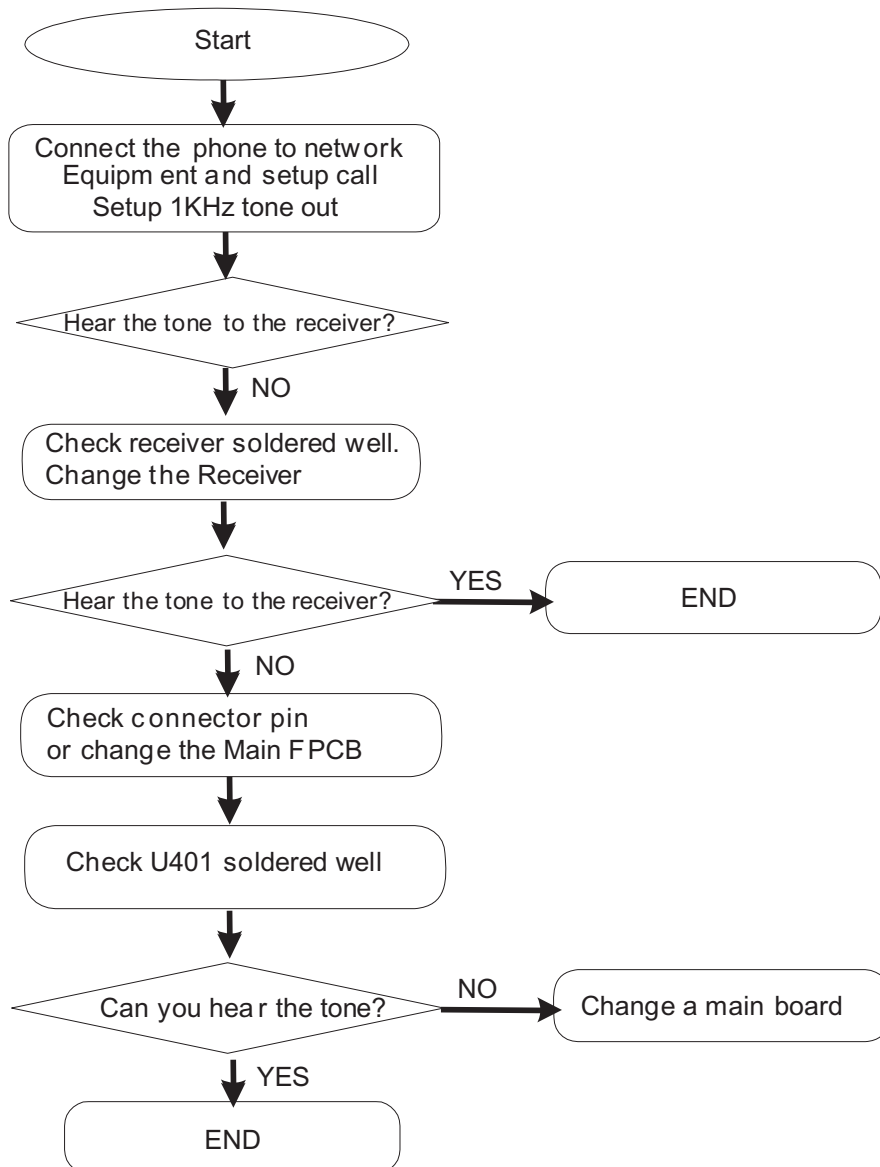
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### 4.13 Audio trouble

#### 4.13.1 Receiver path

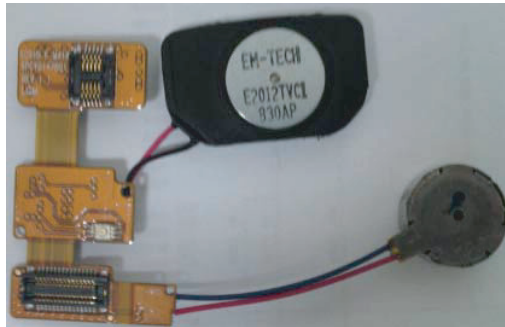
Voice Receiver path as below:

MSM6280 Ear1ON/Ear1OP → R411/ R412 → U401(SPK/ RCV Switch) → FB402/ 403 →  
CN601(Main to FPCB Connector) → Main FPCB → Receiver

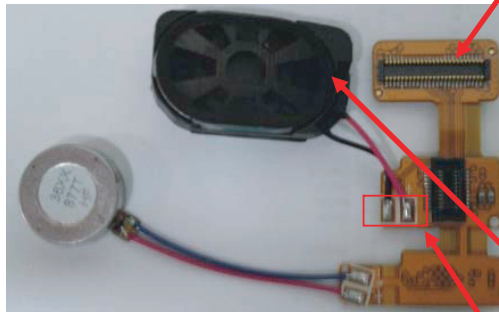




## 4. TROUBLE SHOOTING

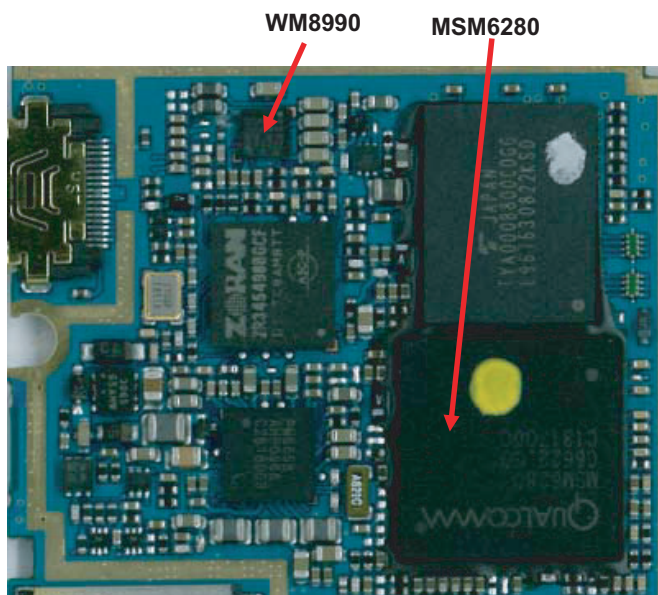
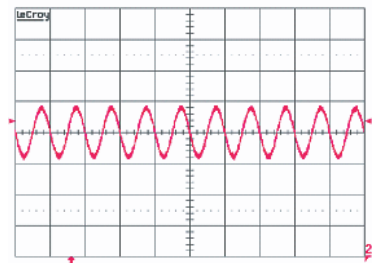
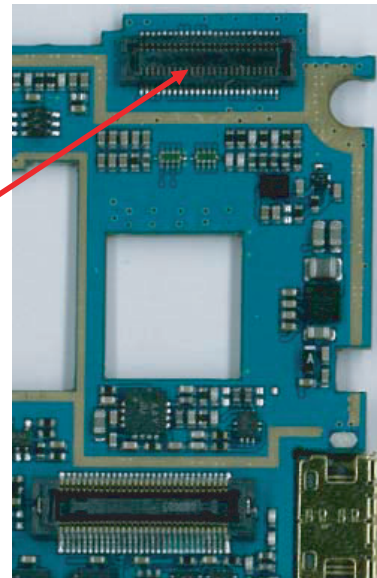


Main FPCB connector



Receiver

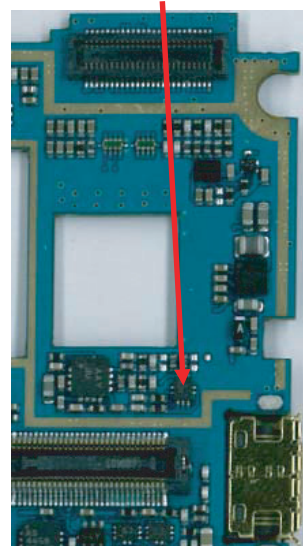
Receiver pads



WM8990

MSM6280

SPK/ RCV Switch



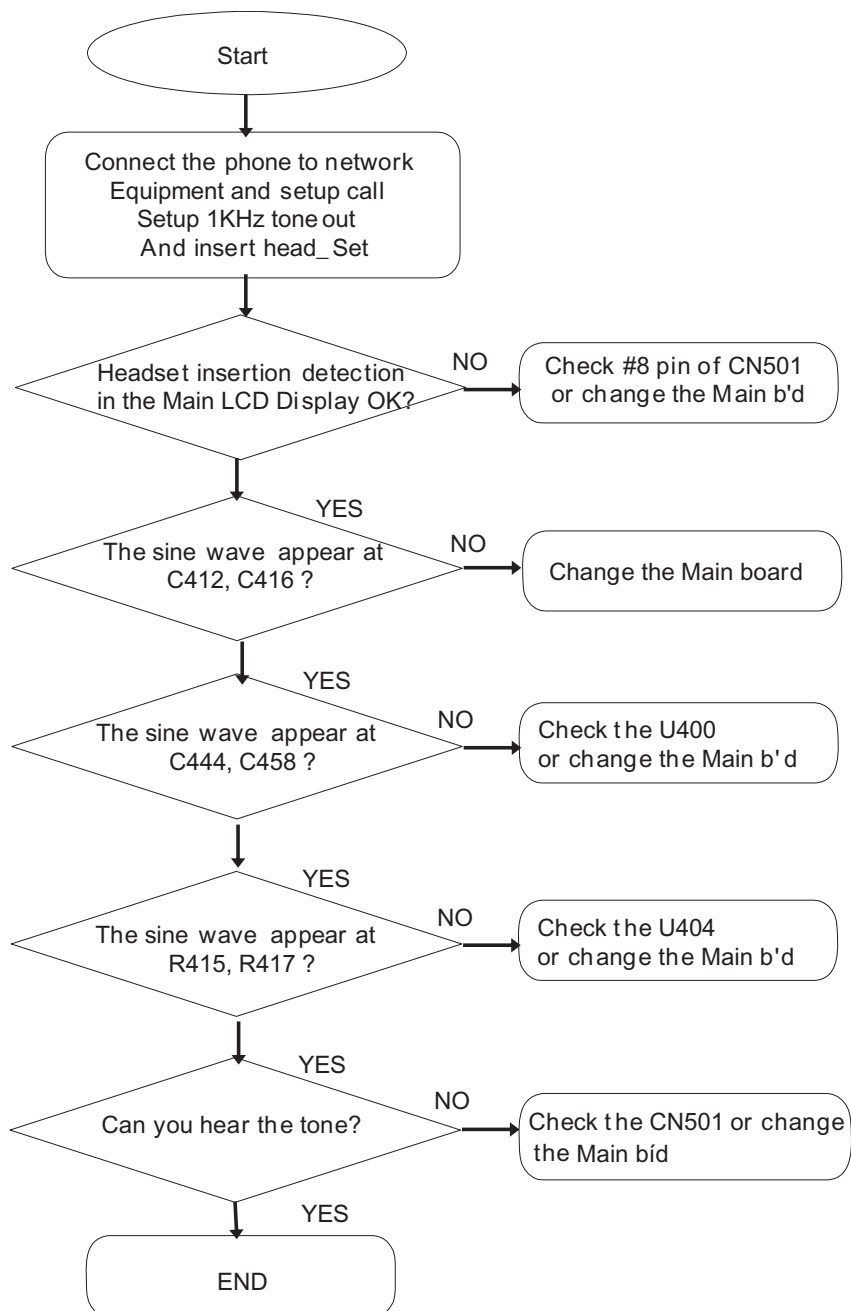


## 4. TROUBLE SHOOTING

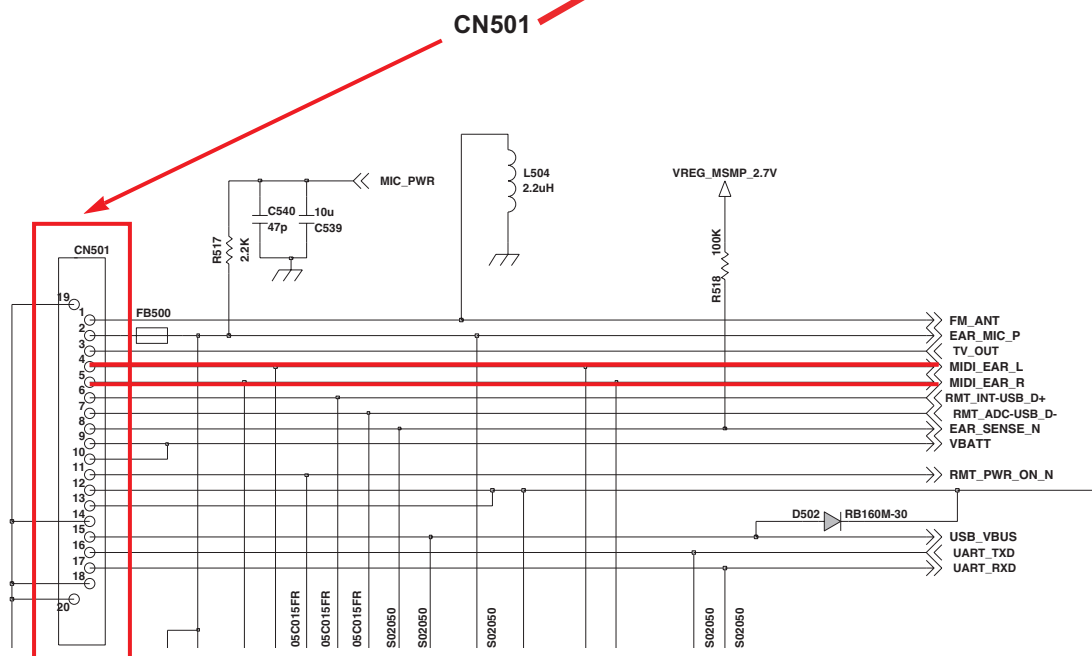
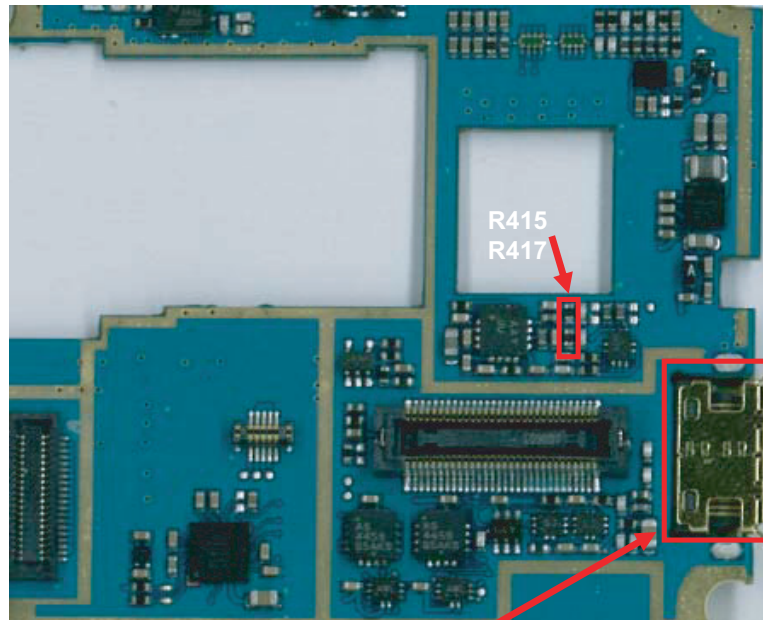
### 4.13.2 Voice path for headset

Voice path for Head\_Set as below:

MSM6280 HPH\_R, HPH\_L → C412, C416 U400(audio codec) → C444, C458 → R413, R420 → U404(Headset AMP) → FB404, FB405 → R415, R417 → #4, #5 pin of CN501 headset Jack

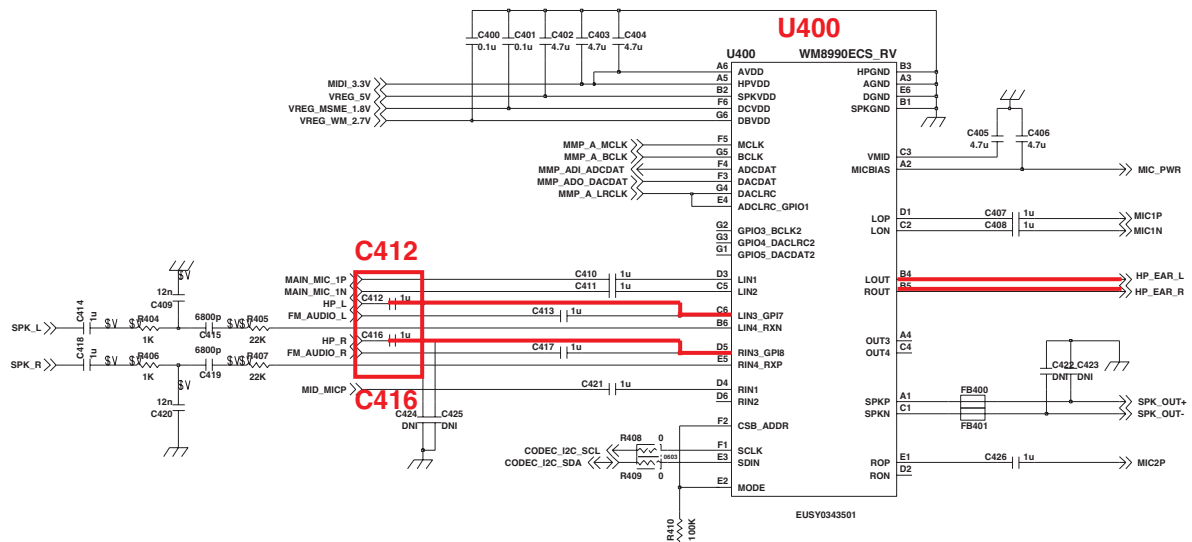
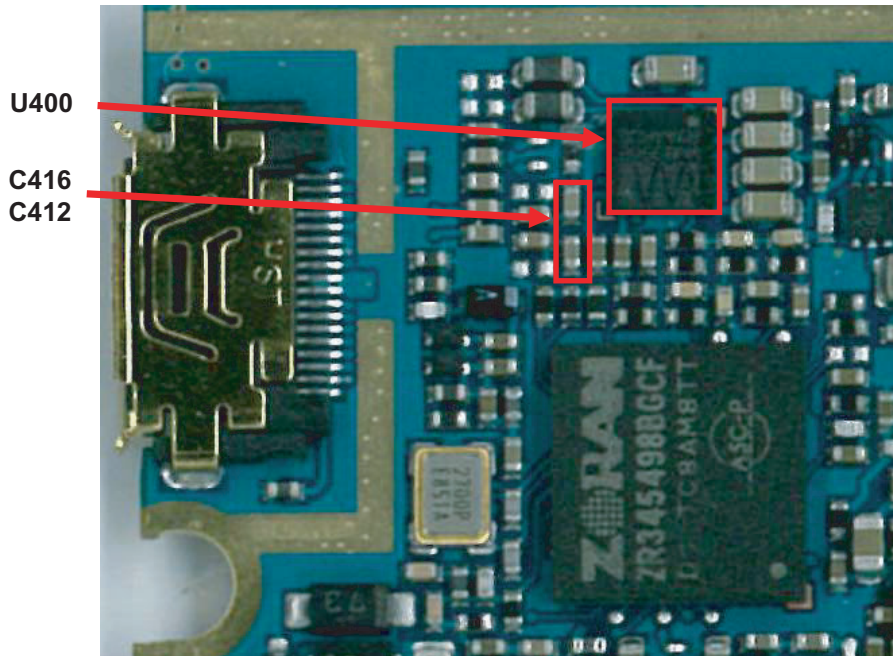


## 4. TROUBLE SHOOTING



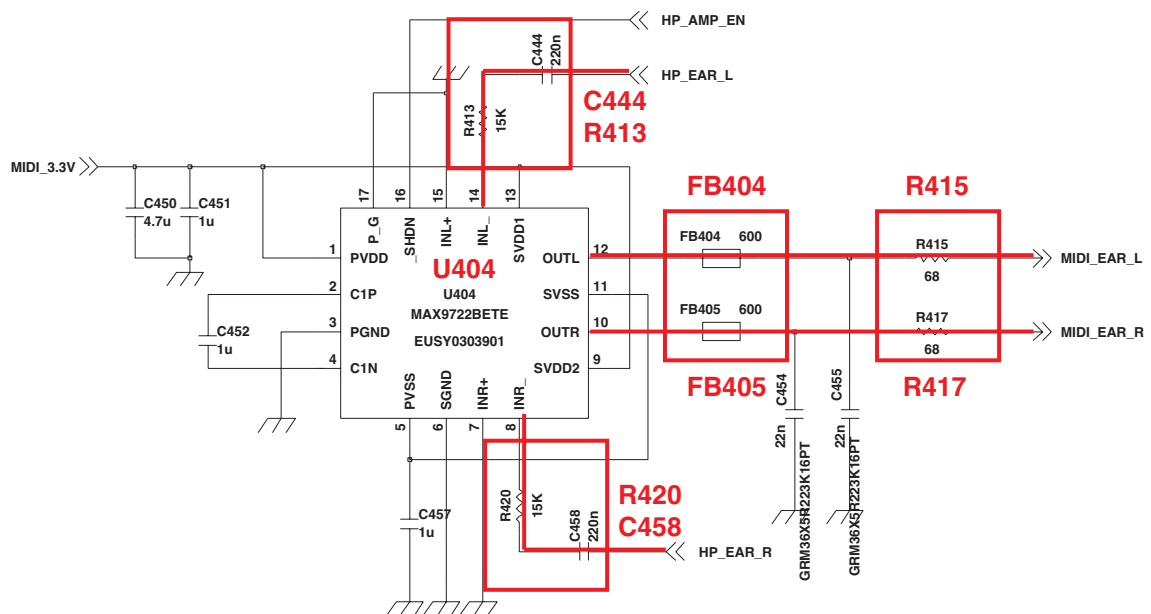
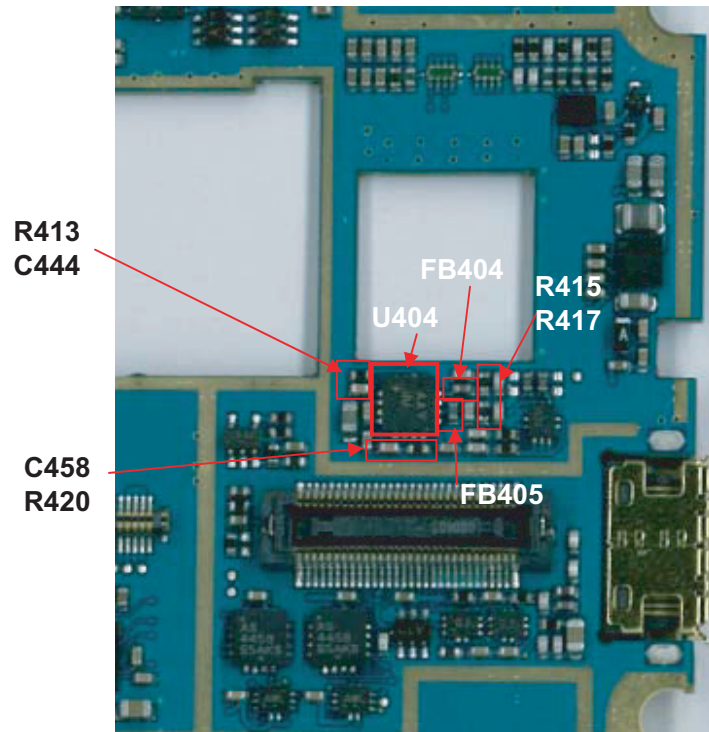
Schematic of voice path

## 4. TROUBLE SHOOTING



Schematic of voice path

## 4. TROUBLE SHOOTING



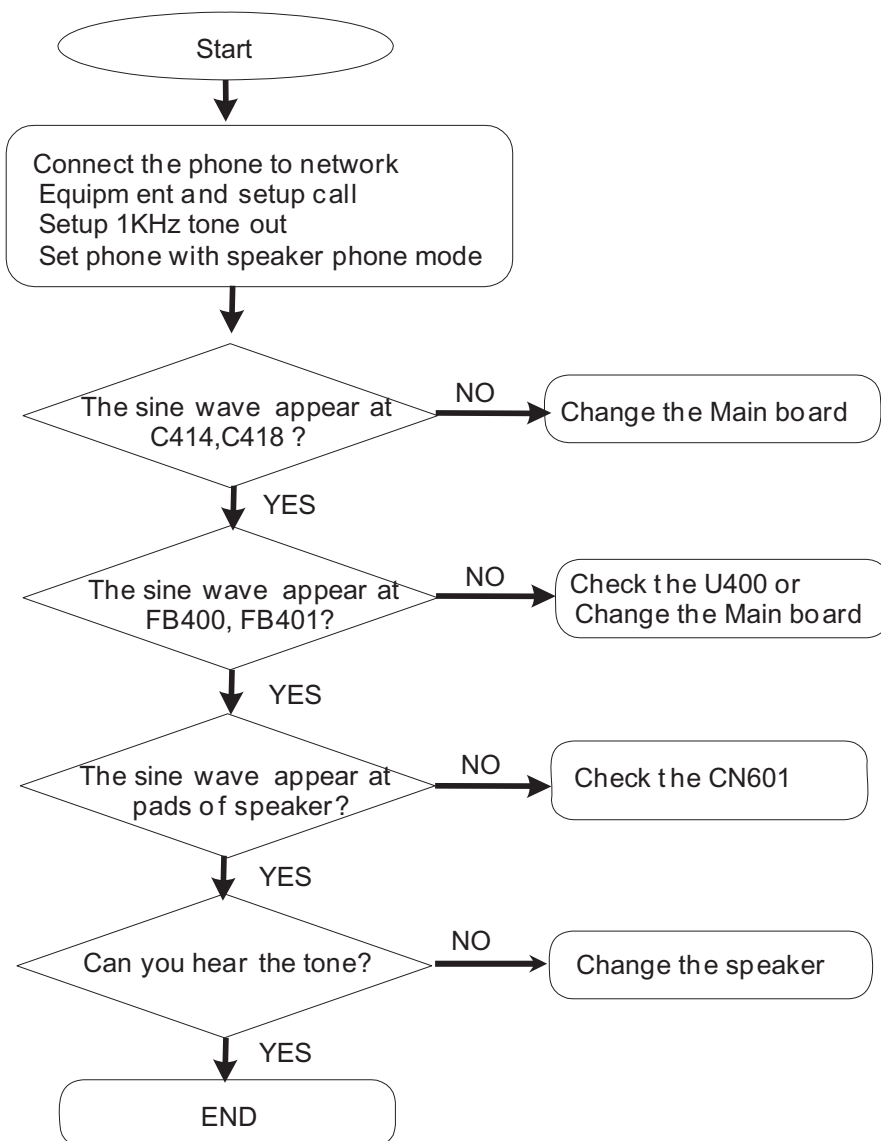
Schematic of voice path

## 4. TROUBLE SHOOTING

### 4.13.3 Loud speaker path (voice speaker phone/VT)

Loud speaker path as below:

MSM6280 LINE\_ON, LINE\_OP → C414,C418 → R404,R406 → C415,C419 → R405,R407 →  
U400(audio codec) → FB400,FB401 → U401( SPK/ RCV Switch) → FB402, FB403 → CN601 (FPCB  
connector) → SPK PAD → Speaker



LINE_ON	AC18	>>	SPK_L
LINE_OP	AC17	>>	SPK_R
HPH_R	AA17	>>	HP_R
HPH_L	W17	>>	HP_L
EAR1ON	AE18	>>	RCV-
EAR1OP	AF18	>>	RCV+
MICBIAS	T15	>>	MICBIAS

The schematic diagram illustrates the internal connections of the EUSY0343501 audio interface. It shows the following components and connections:

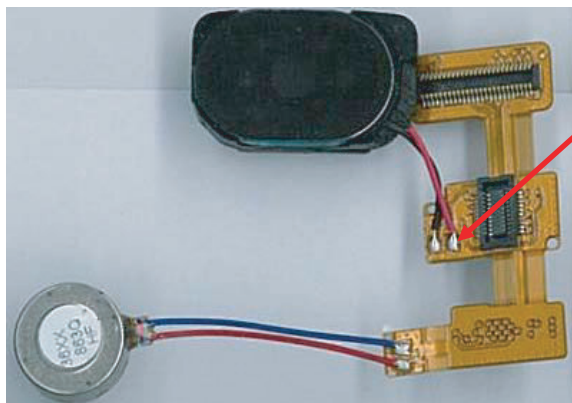
- Microphone Section:**
  - Inputs: MIC1P, MIC1N, MIC2P.
  - Op-amp: MIC1P and MIC1N are connected to an op-amp (C407) with feedback capacitor C408. MIC2P is connected to another op-amp (C426) with feedback capacitor C428.
  - Output: MIC1P and MIC1N are connected to the MIC1P and MIC1N pins of the EUSY0343501.
- HP (Headphone) Section:**
  - Inputs: HP\_EAR\_L, HP\_EAR\_R.
  - Op-amp: HP\_EAR\_L and HP\_EAR\_R are connected to an op-amp (C412) with feedback capacitor C413.
  - Output: HP\_EAR\_L and HP\_EAR\_R are connected to the HP\_L and HP\_R pins of the EUSY0343501.
- FM Audio Section:**
  - Inputs: FM\_AUDIO\_L, FM\_AUDIO\_R.
  - Op-amp: FM\_AUDIO\_L and FM\_AUDIO\_R are connected to an op-amp (C416) with feedback capacitor C417.
  - Output: FM\_AUDIO\_L and FM\_AUDIO\_R are connected to the FM\_L and FM\_R pins of the EUSY0343501.
- Other Connections:**
  - SPK\_L and SPK\_R are connected to the SPK\_L and SPK\_R pins of the EUSY0343501.
  - SPK\_OUT+ and SPK\_OUT- are connected to the SPK\_OUT+ and SPK\_OUT- pins of the EUSY0343501.
  - Various other pins (G2, G3, G1, D3, C3, C6, D5, D4, F2, E3, E2) are connected to ground or other components as shown in the diagram.

The diagram is labeled EUSY0343501 at the bottom right.

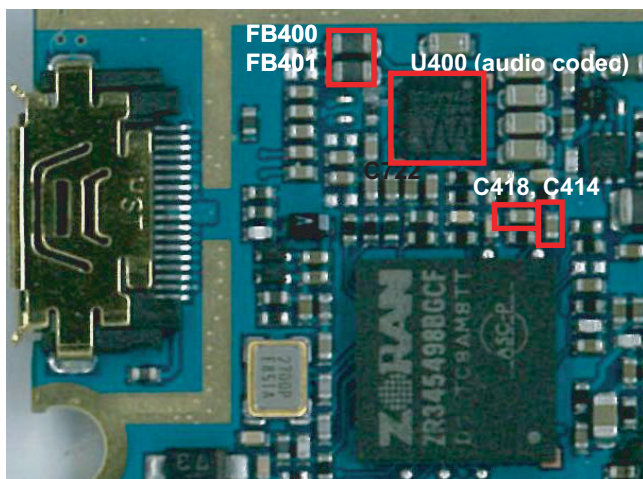
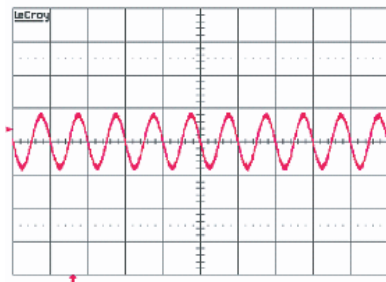
The schematic diagram illustrates the electrical connections for the GB042-50S-H10-E3000 ENBY0040501 (H=1.0T, Socket) component. The component is shown as a central vertical strip with pins numbered 1 to 50. The connections are as follows:

- Top Connections:**
  - Close to Connector:** A network of resistors (R600, R601, R602) and capacitors (C611) is connected to the top pins.
  - VGA VDD 2.7V:** Connected to pin 1.
  - VGA\_VDD\_IO\_2.7V:** Connected to pin 2.
- Left Connections:**
  - SBIAS, SSENS, GAIN1, GAIN2, MMP\_CAM\_INT:** Connected to pins 3, 4, 5, 6, and 7.
  - VGA\_CAM\_MCLK, MMP\_I2C\_SDA, MMP\_I2C\_SCL:** Connected to pins 8, 9, and 10.
  - MMP\_CAM\_HSYNC, MMP\_CAM\_VSYNC, CAM\_DATA[0] through CAM\_DATA[7]:** Connected to pins 11 through 18.
  - MMP\_CAM\_PCLK, 8M\_CAM\_MCLK:** Connected to pins 19 and 20.
  - CAM\_VDD\_CORE 1.2V:** Connected to pin 21.
- Right Connections:**
  - VGA\_VDD 2.7V, VGA\_VDD\_IO\_2.7V, I2C\_SCL, I2C\_SDA, VGA\_CAM\_RESET\_N, VGA\_CAM\_PWDN:** Connected to pins 22 through 28.
  - AUDIO+ MOTOR, MMP\_CAM\_RESET\_N, STROBE\_TRIGGER:** Connected to pins 29 through 31.
  - CAM\_VDD\_AF 2.7V, CAM\_VDD\_SA 2.7V, SUB\_PM 2.7V, CAM I/O SOURCE, CAM\_VDD\_SD 1.8V:** Connected to pins 32 through 38.
- Bottom Connections:**
  - EVLC1HS20015, C613, C614, C615, C616, C617, C618:** Connected to pins 39 through 45.
  - GB042-50S-H10-E3000 ENBY0040501 (H=1.0T, Socket):** The main component being connected.
  - C619, C620, C621, C622, C623, C624, C625, C626, C627, C628, C629, C630, A601, EVLC1HS20015, C631, A602:** Connected to pins 46 through 50.

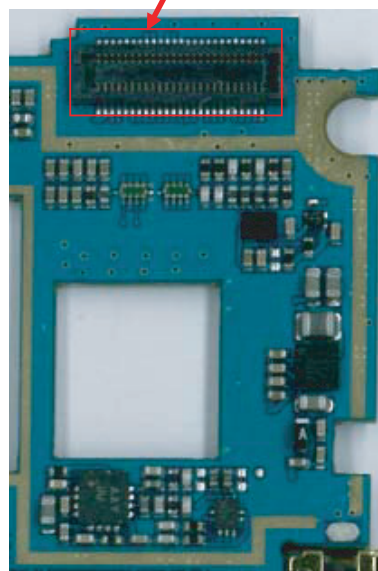
## 4. TROUBLE SHOOTING



Pads of Speaker



FPCB Connector



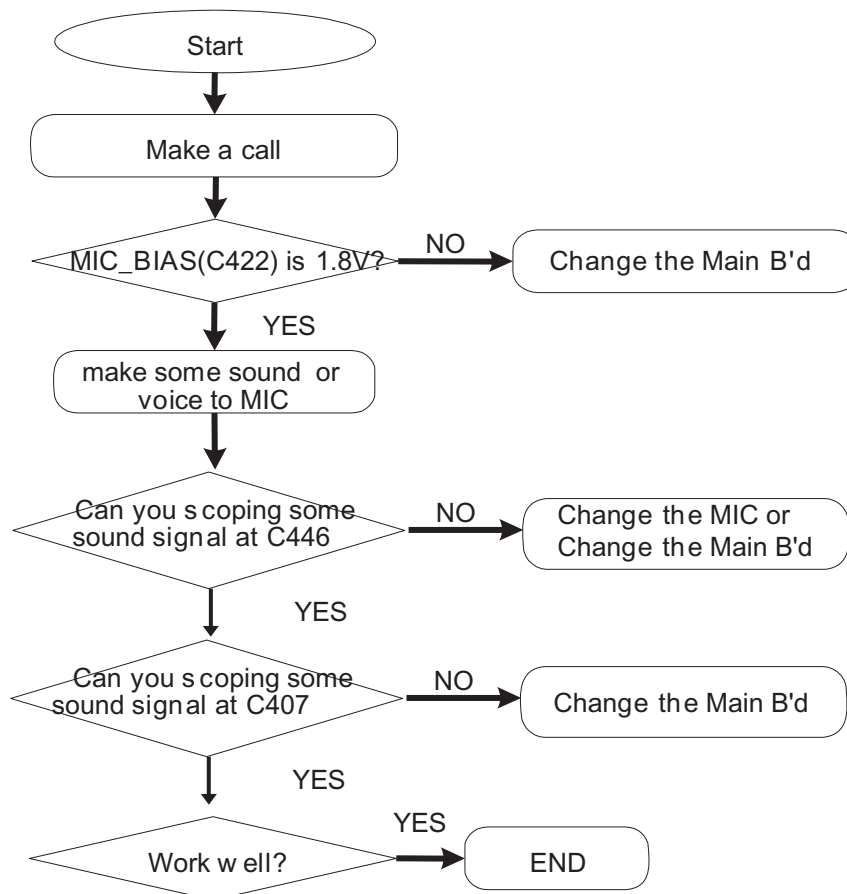


### 4.13.4 Microphone for main MIC

Main Microphone path as below:

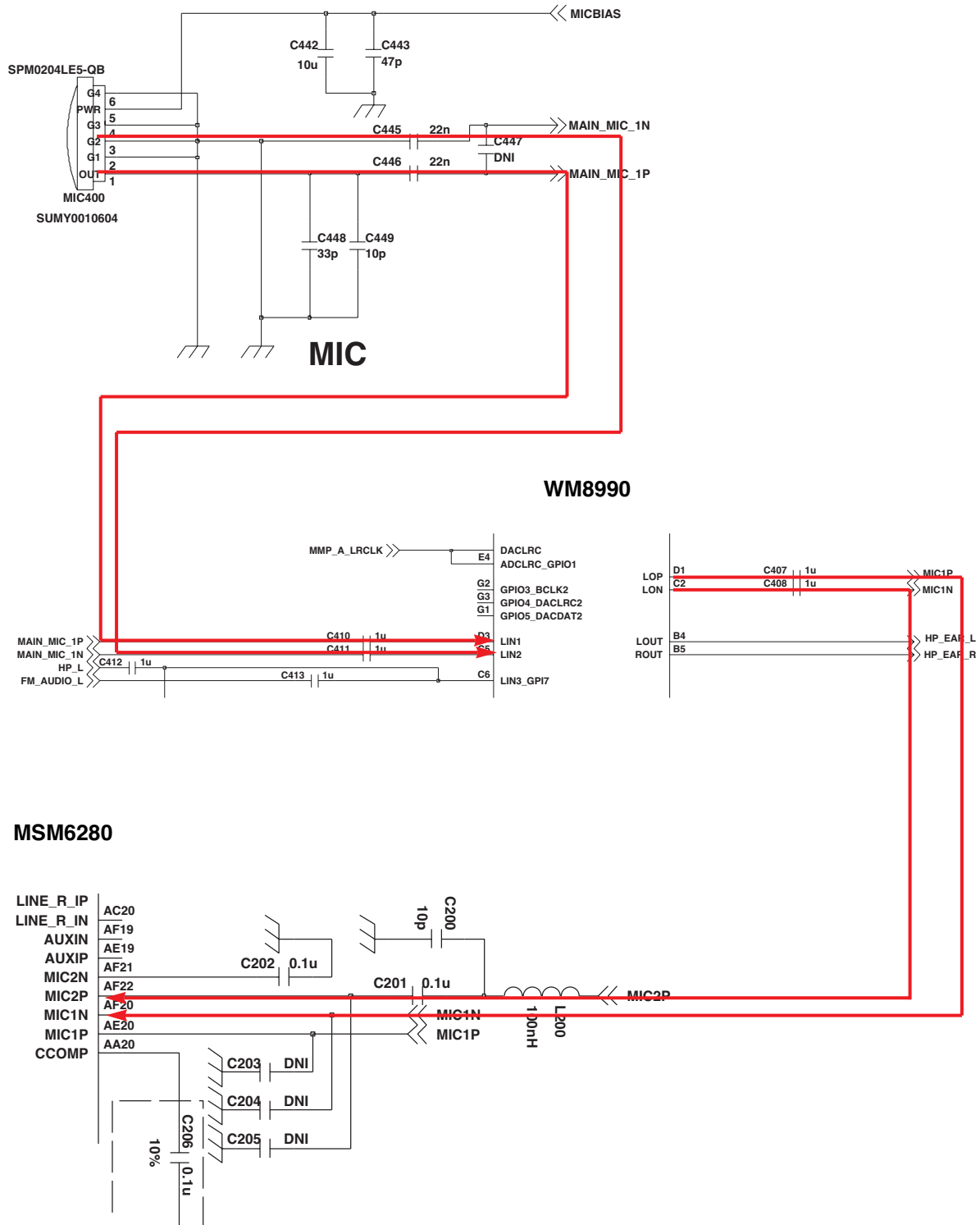
MIC → C445, C446 → C410, C411 → U400 (Audio Codec) → C407, C408 → U200 (MSM6280)

MIC1N, MIC1P

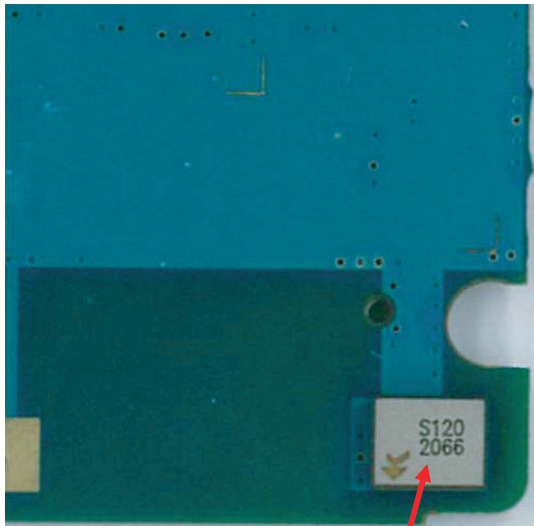




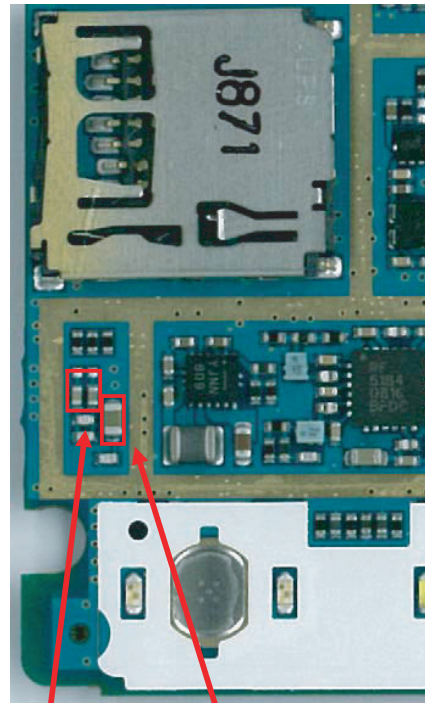
## 4. TROUBLE SHOOTING



## 4. TROUBLE SHOOTING



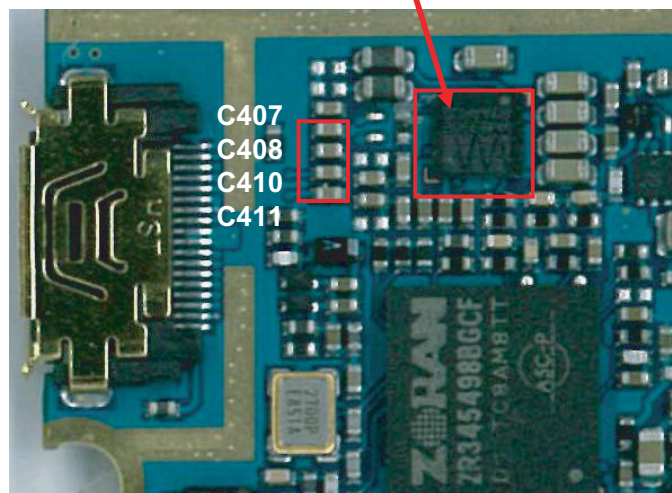
Main MIC



C445, C446

C442

U400 WM8990



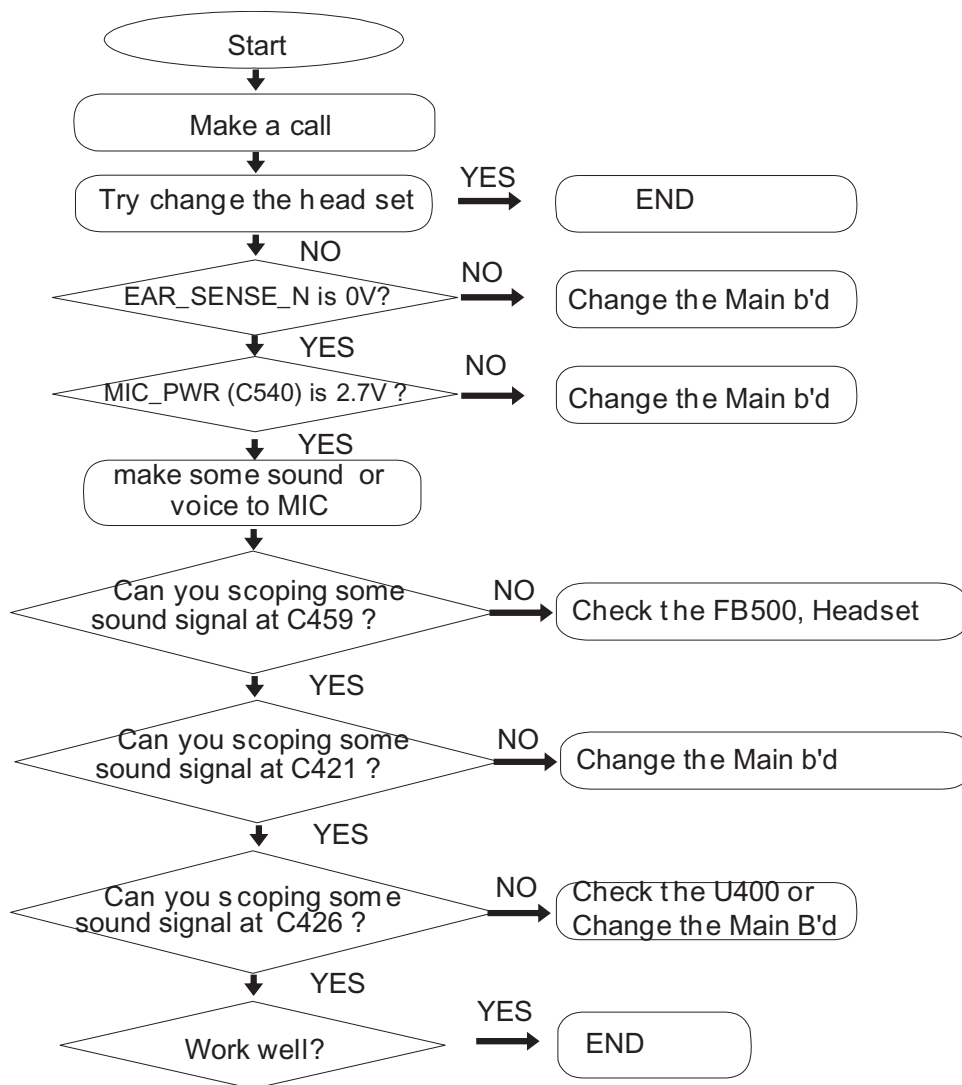
C407  
C408  
C410  
C411

## 4. TROUBLE SHOOTING

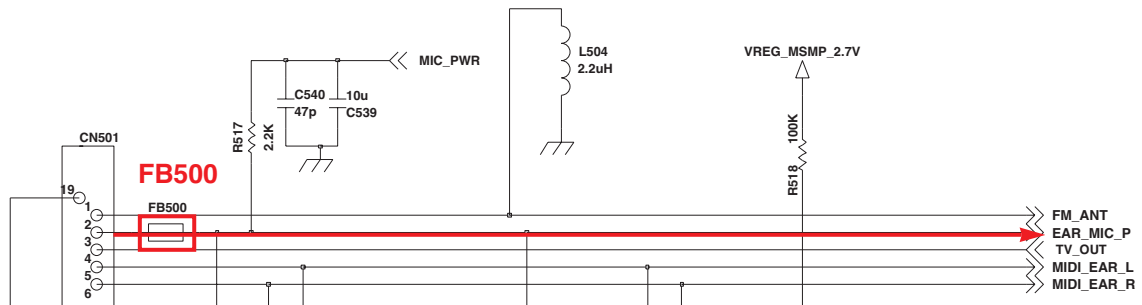
### 4.13.5 Microphone for headset

MIC for Head\_Set path as below:

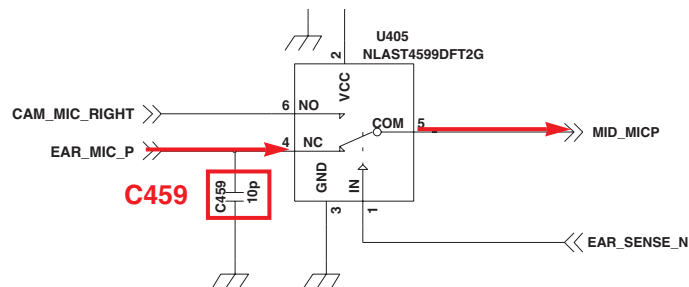
Insert Headset → EAR\_SENSE\_N(CN501 pin8) go 0V → MSM6280 sense Head\_Set insertion → MIC signal → U405 (Cam/ ear mic Switch) → C421 → U400 (audio codec) → C426 → L200 → C201 → MSM6280.



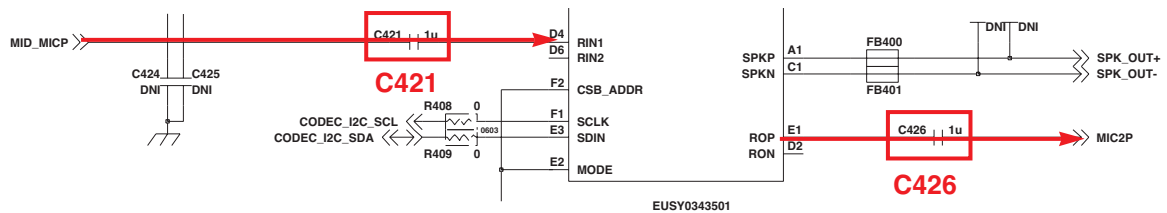
## CN501 Earjack



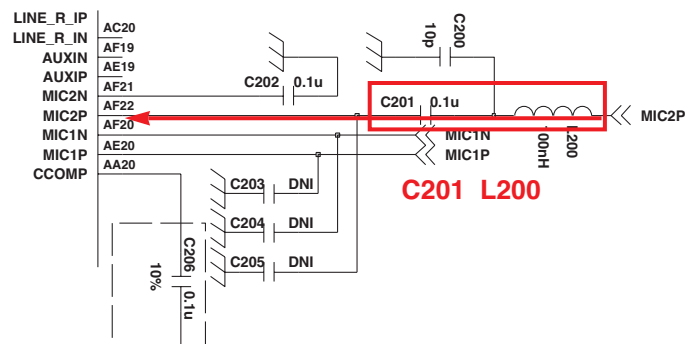
## U405 Cam/ Ear mic Switch



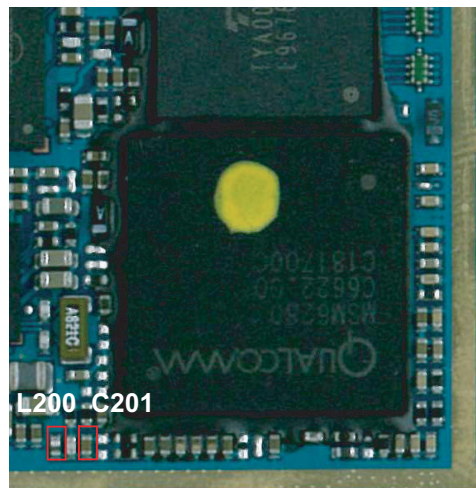
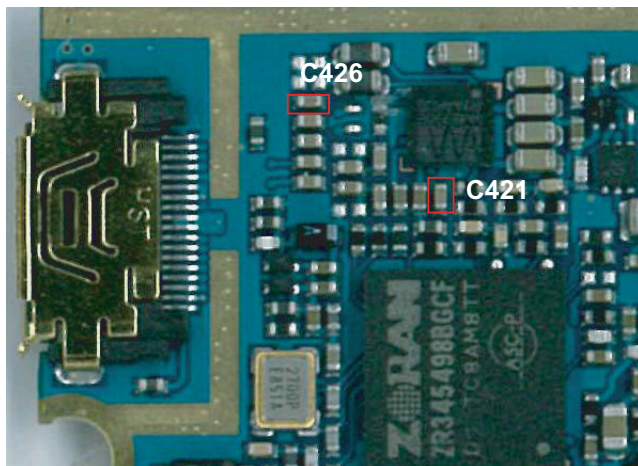
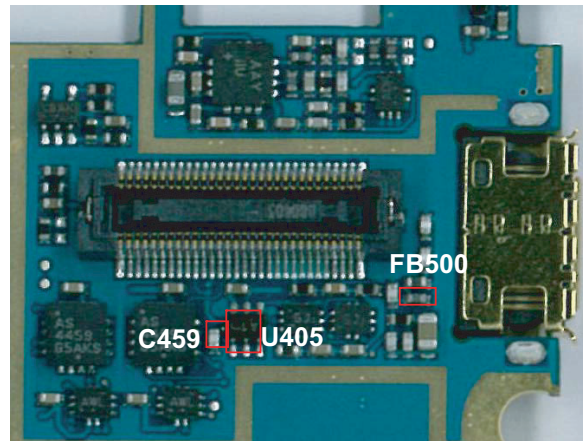
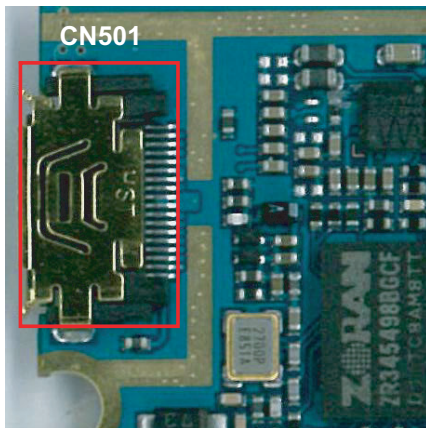
**U400 WM8990**



## U200 MSM6280



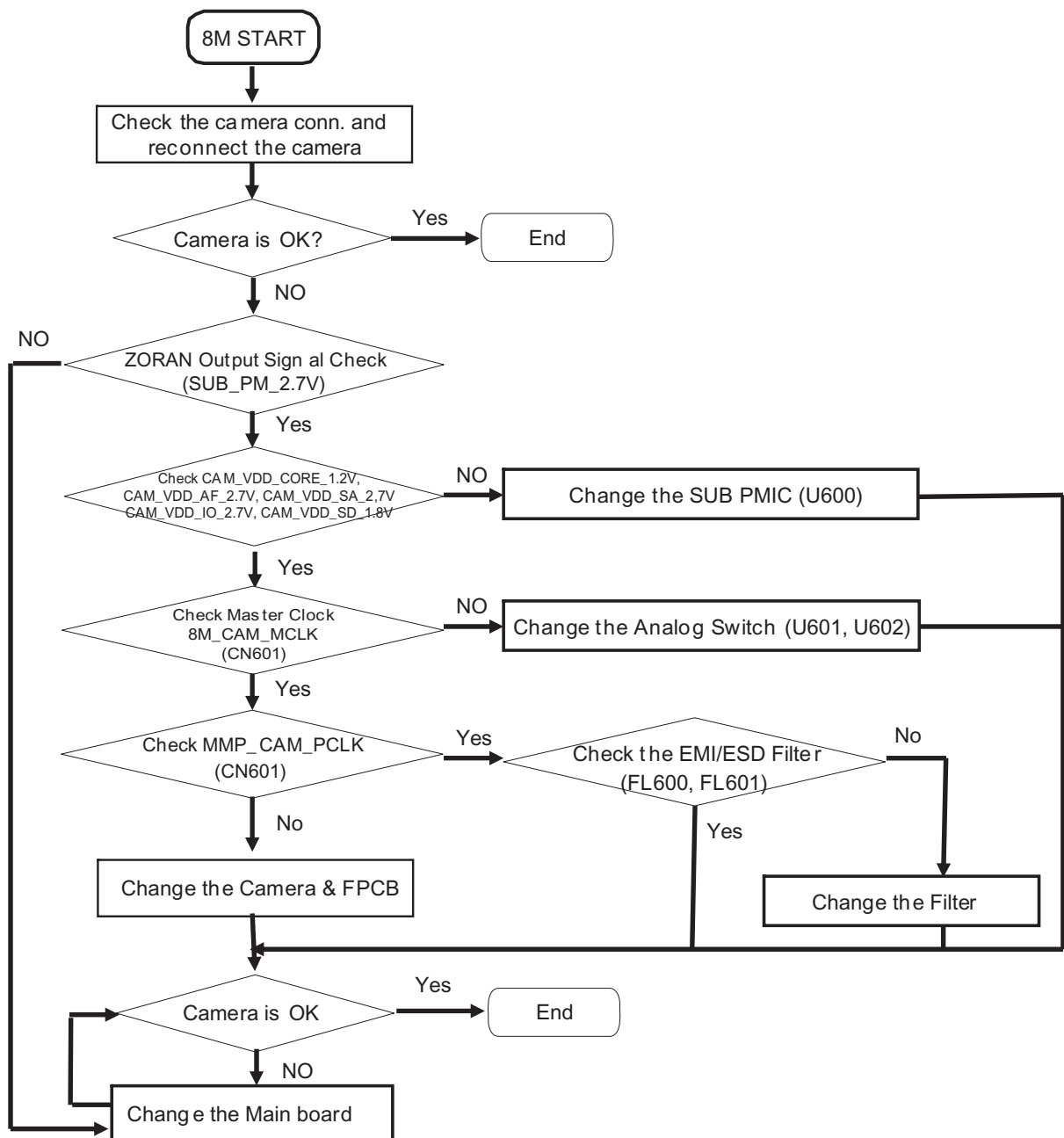
## 4. TROUBLE SHOOTING



### 4.14 Camera trouble

Camera control signals are generated by ZORAN (Multimedia Chip) and directly connected with ZORAN.

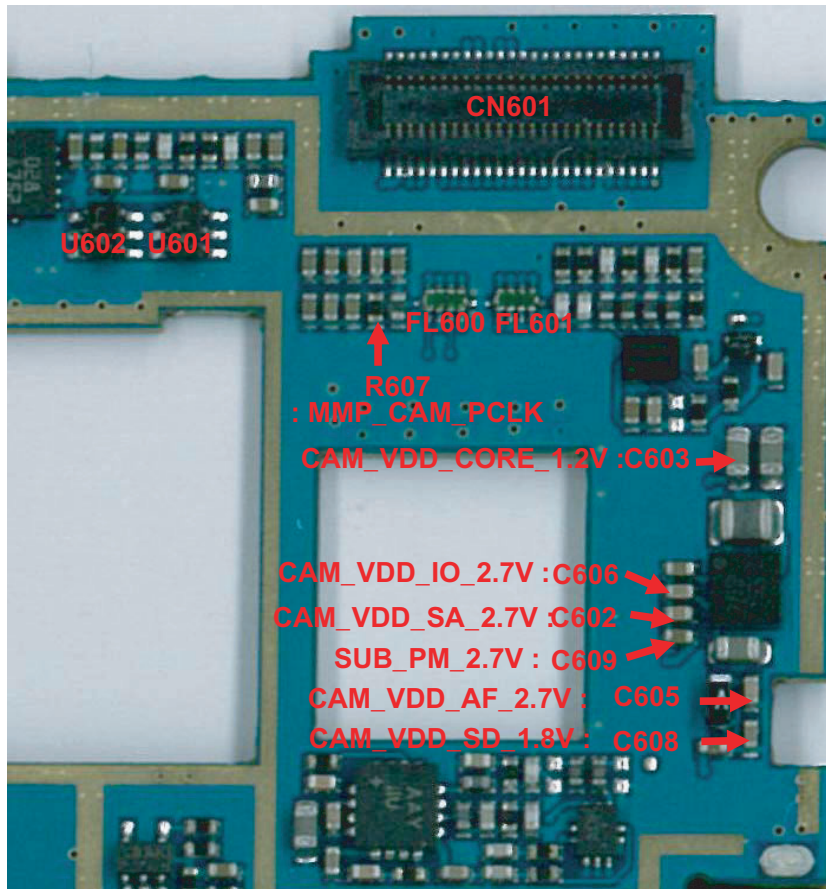
KC910 has two cameras. The one is a 8 Mega Camera, the other is VGA camera.



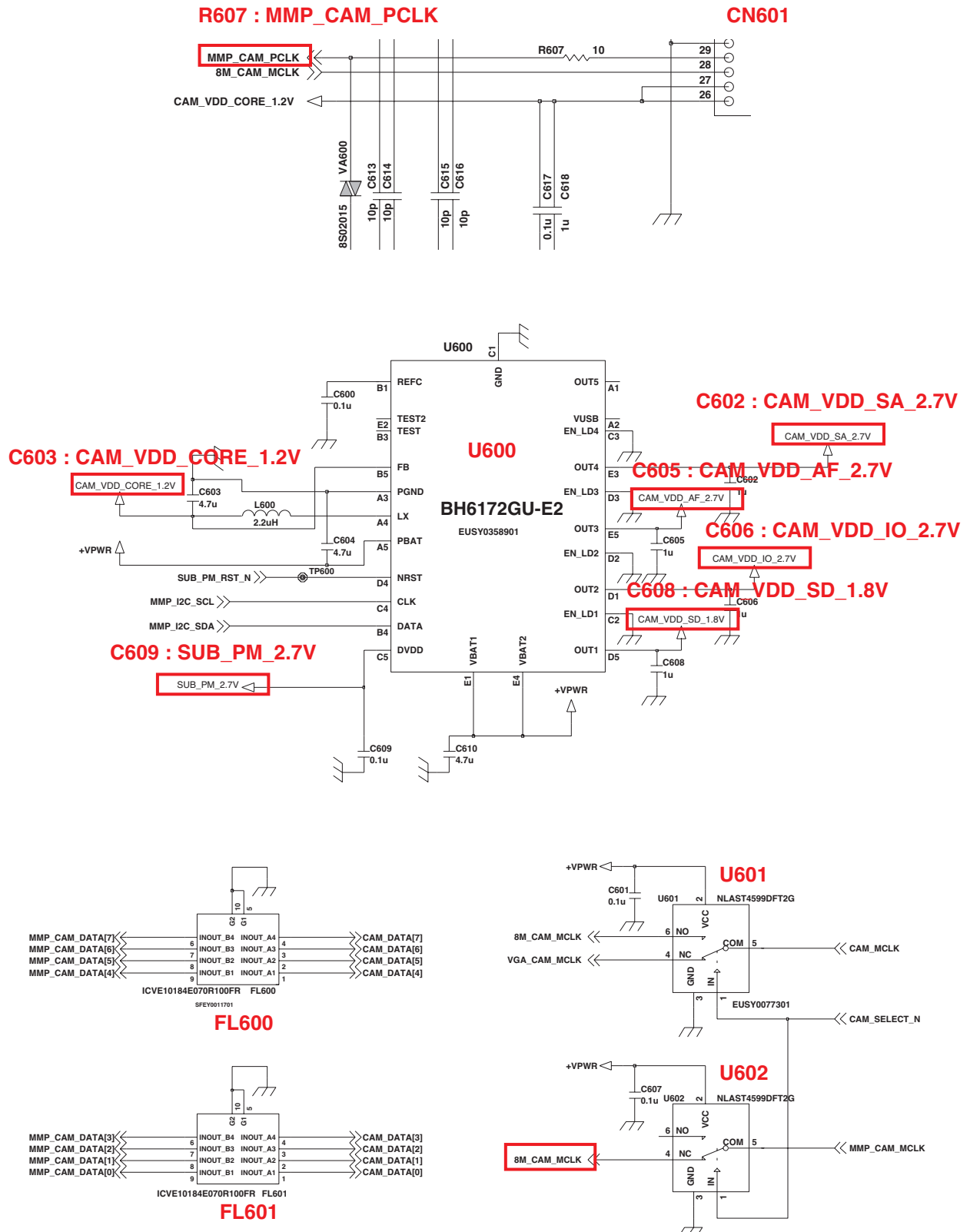


## 4. TROUBLE SHOOTING

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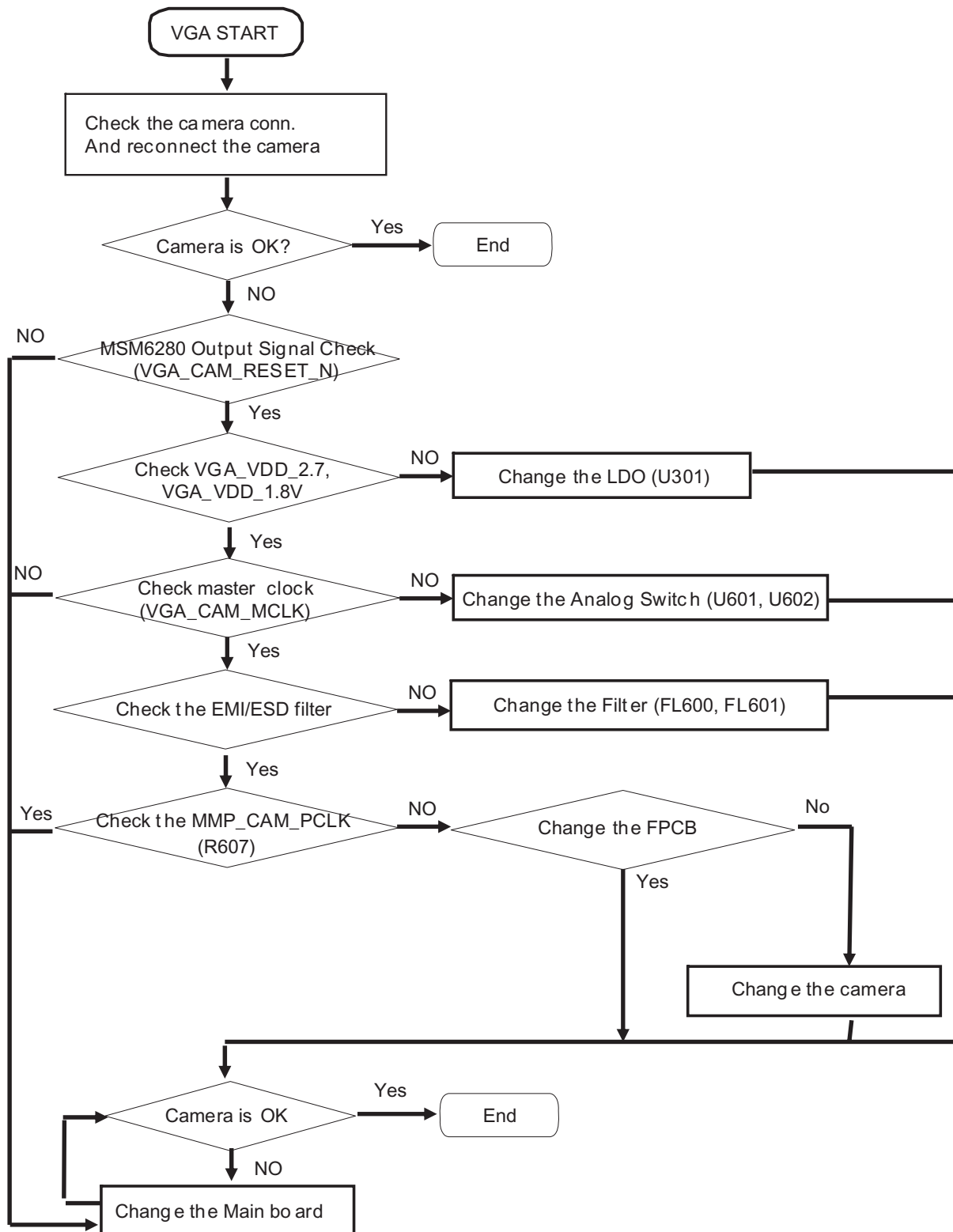


## 4. TROUBLE SHOOTING

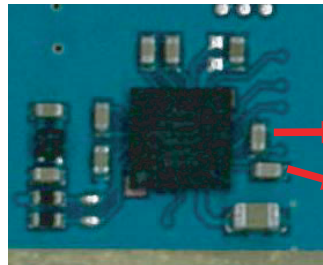




## 4. TROUBLE SHOOTING

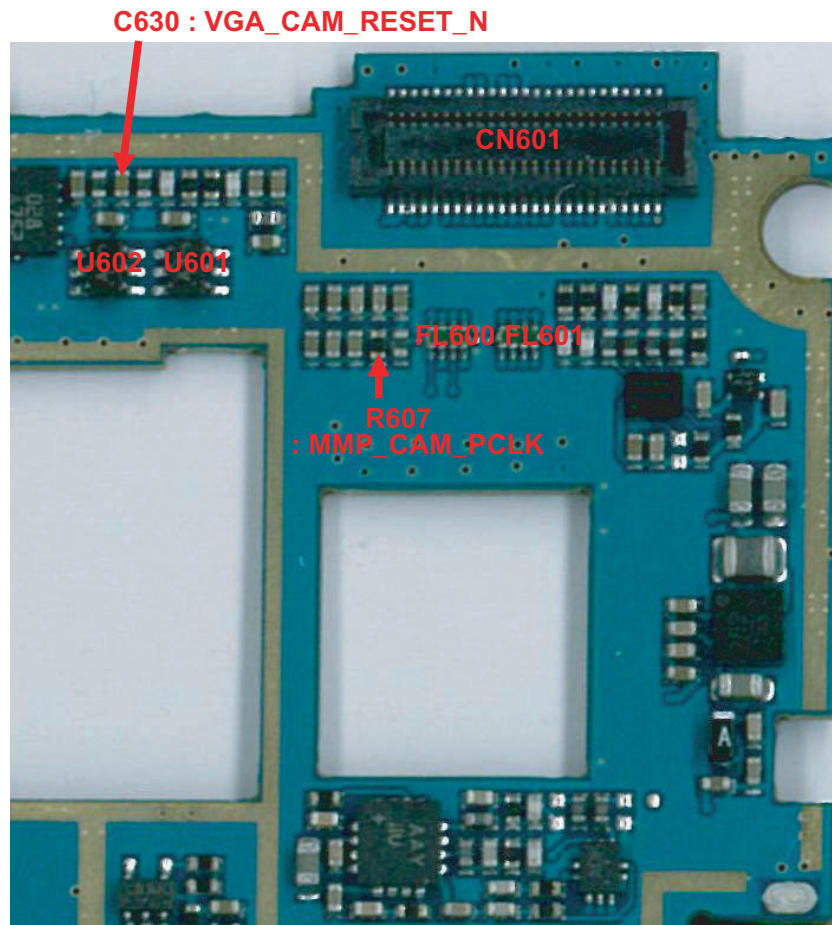


## 4. TROUBLE SHOOTING



C335 : VGA\_VDD\_2.7V

C336 : VGA\_VDD\_1.8V



C630 : VGA\_CAM\_RESET\_N

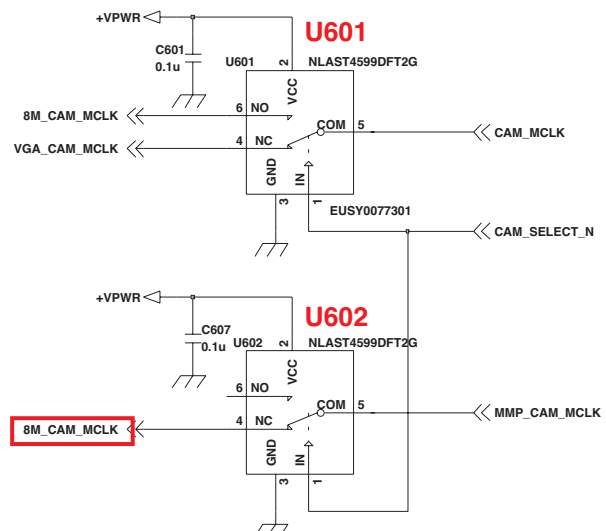
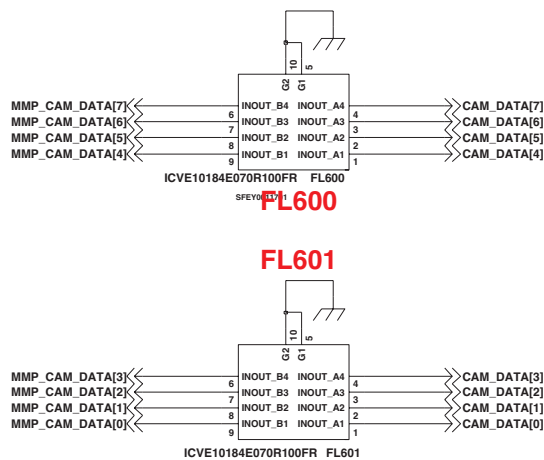
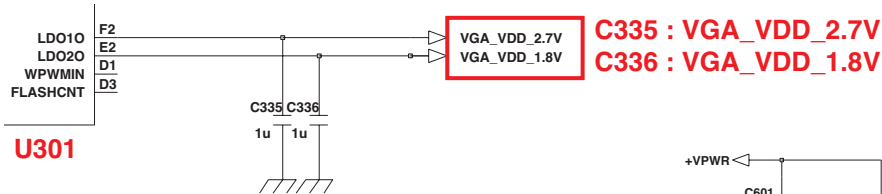
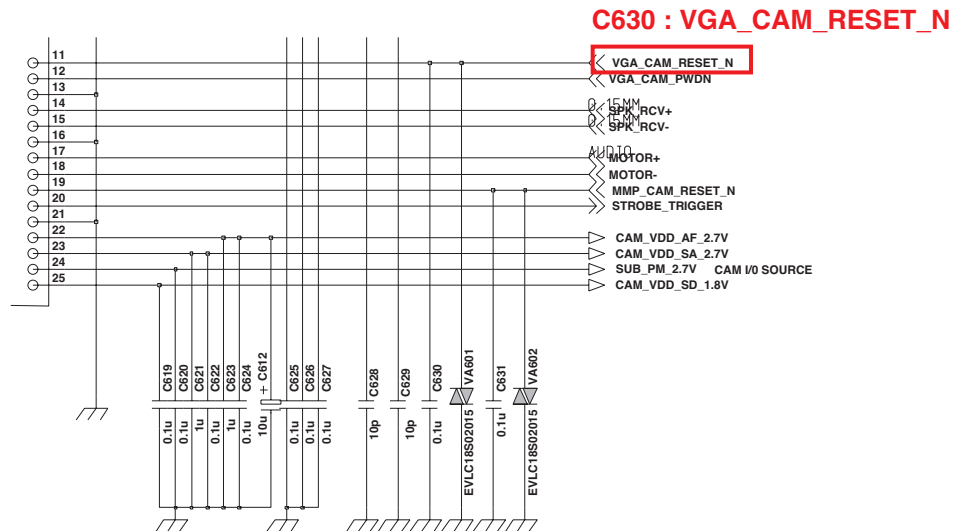
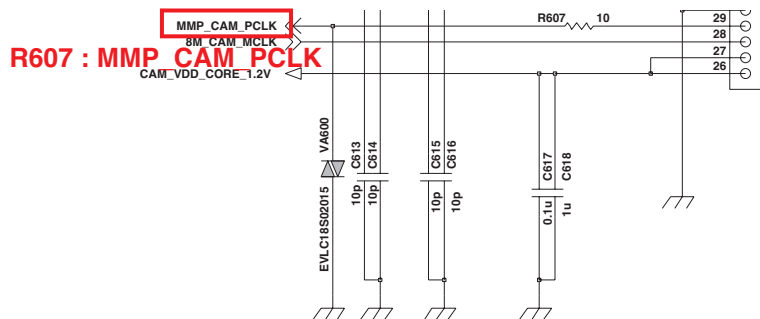
U602 U601

CN601

FL600 FL601

R607  
: MMP\_CAM\_PCLK

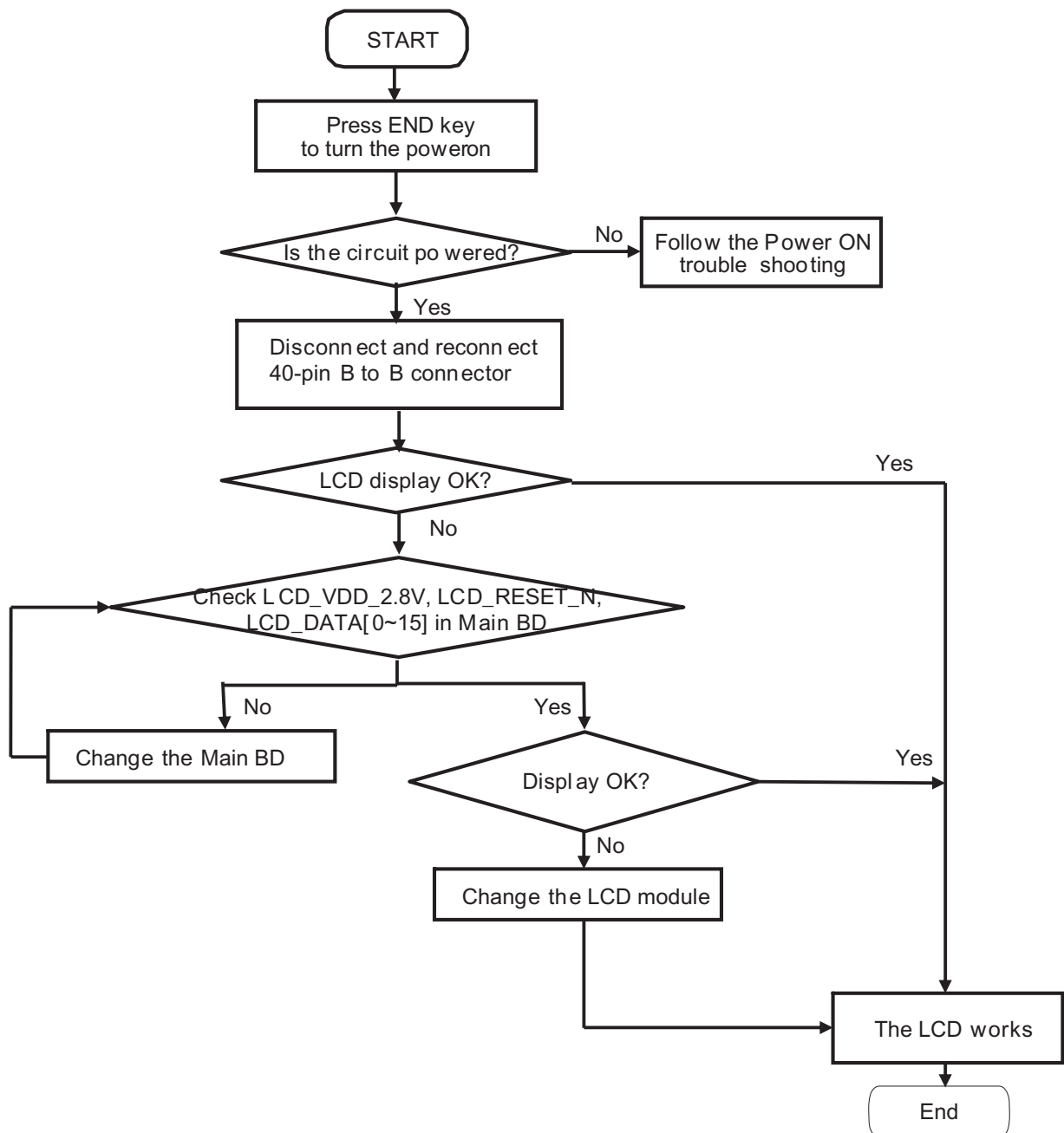
## 4. TROUBLE SHOOTING



### 4.15 Main LCD trouble

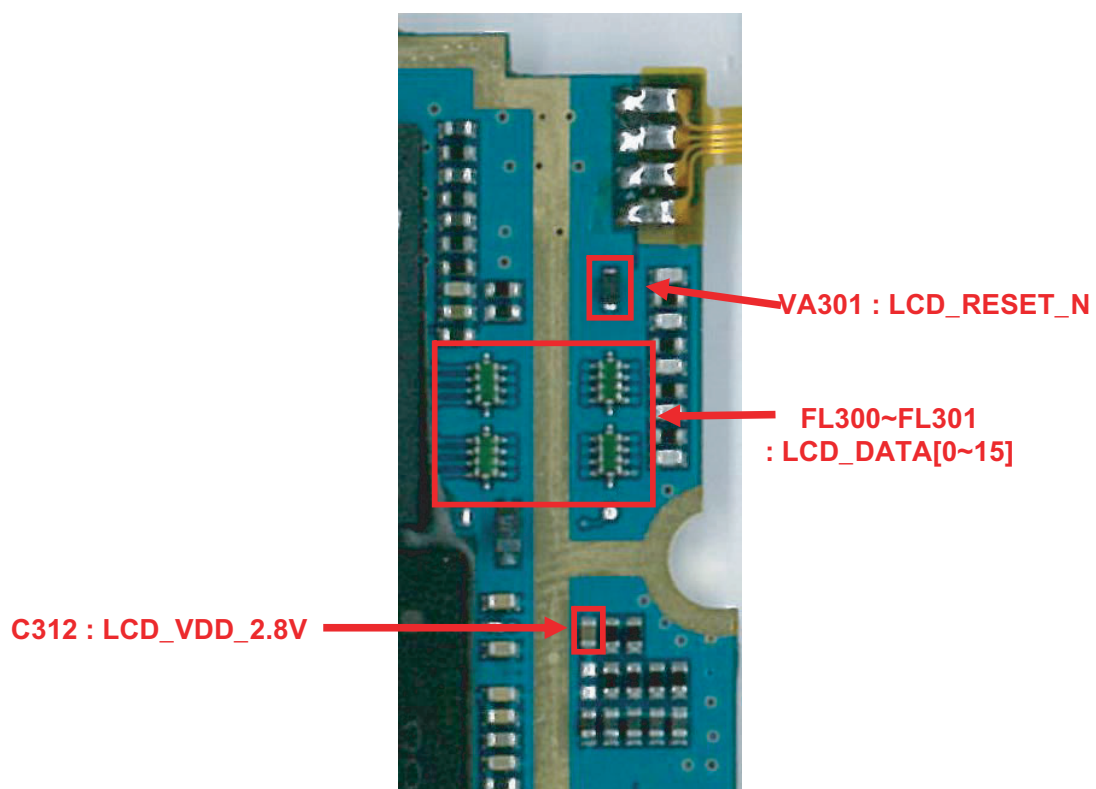
Main LCD control signals are generated by MSM6280. Those signal's path are :

MSM6280 → Z ORAN (Multimedia Chip) → 40-pin connector(CN300 in Main PCB) → 40-pin connector (in LCD Module)



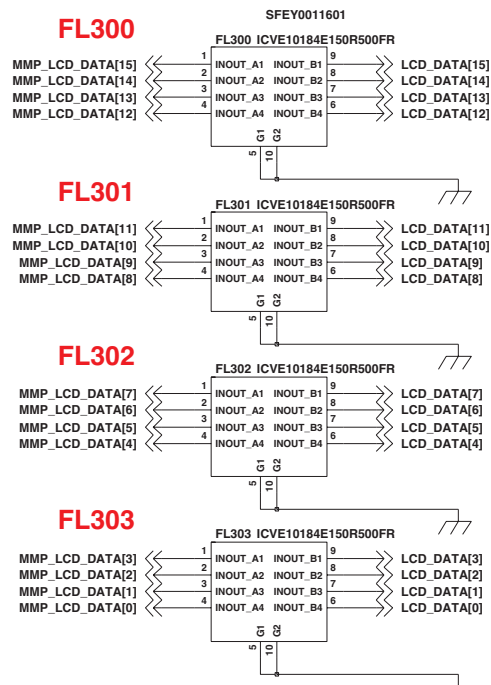
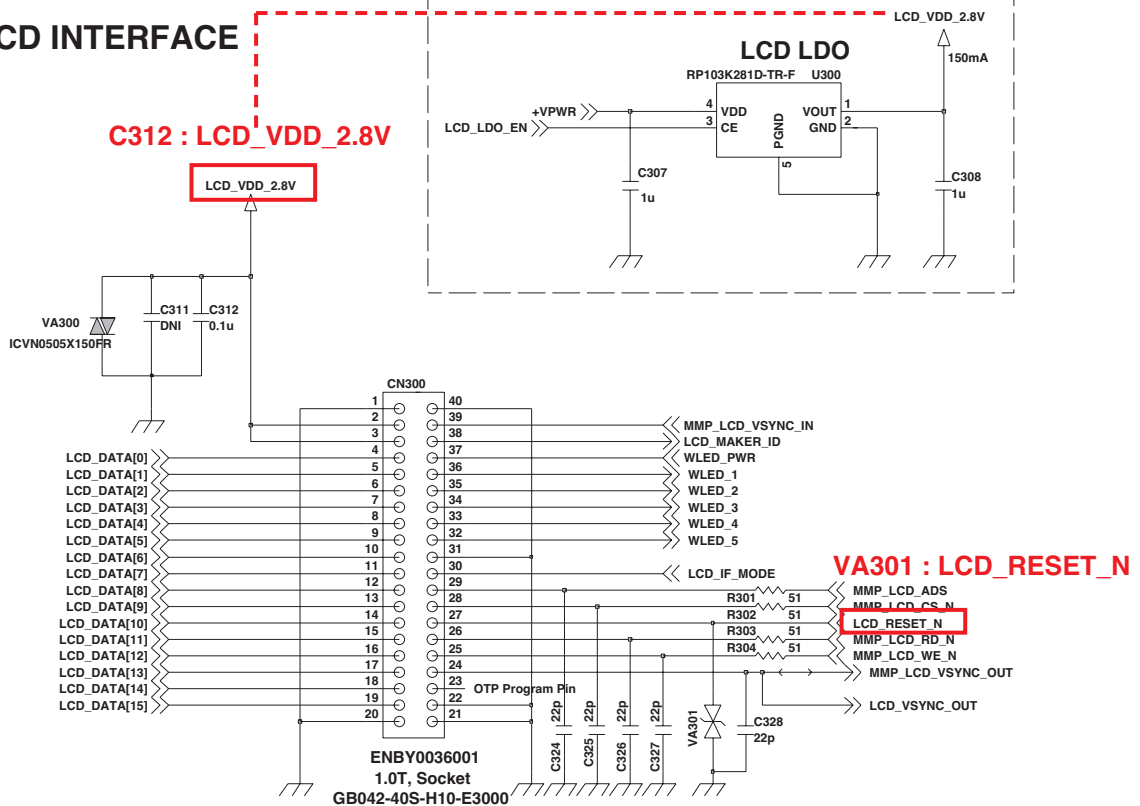
## 4. TROUBLE SHOOTING

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## 4. TROUBLE SHOOTING

### LCD INTERFACE



Schematic of LCD part

## 4. TROUBLE SHOOTING

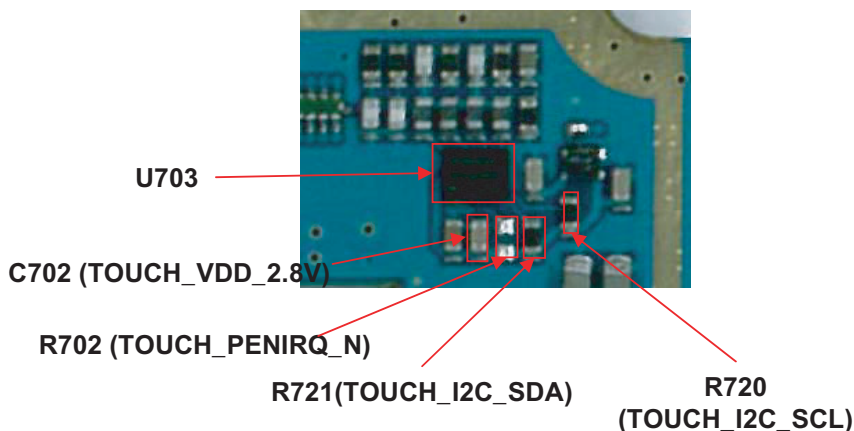
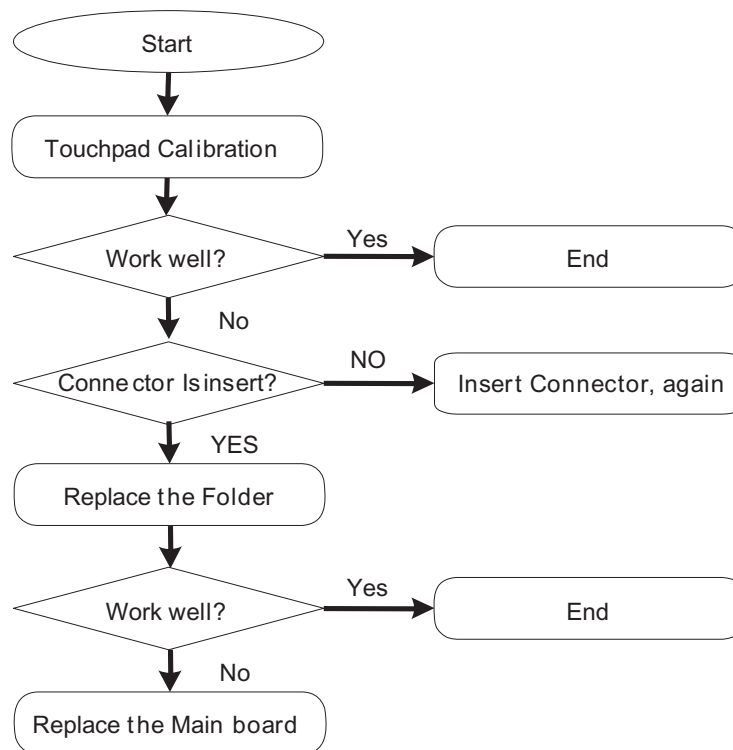
### 4.16 Touch Screen trouble

Touch Initial sequence of KC910 is :

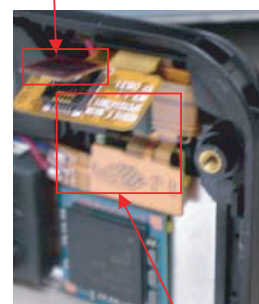
TOUCH\_VDD\_2.8V(C702) goes to 2.8V → TOUCH\_PENIRQ\_N(R723),TOUCH\_I2C\_SCL(R720) & TOUCH\_I2C\_SDA(R721) go to high

Touch operation of KC910 is :

A finger is touching on the screen → TOUCH\_PENIRQ\_N is low → I2C is connected → A finger is took off from the Screen → TOUCH\_PENIRQ\_N is high → I2C is not connected.



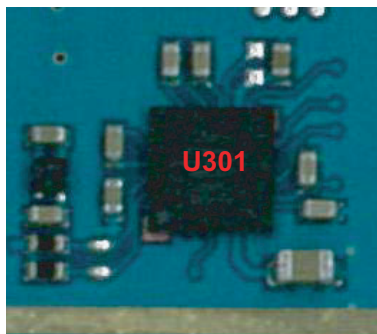
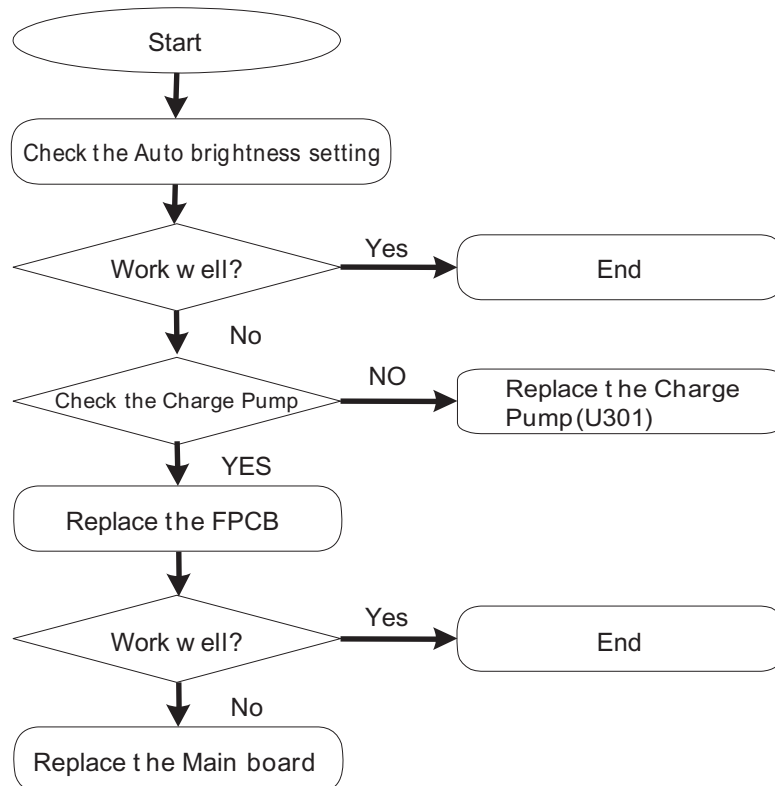
Touch Window Connector



Main FPCB Connector

### 4.17 Ambient Light Sensor trouble

Ambient Light Sensor is controlled by Charge Pump



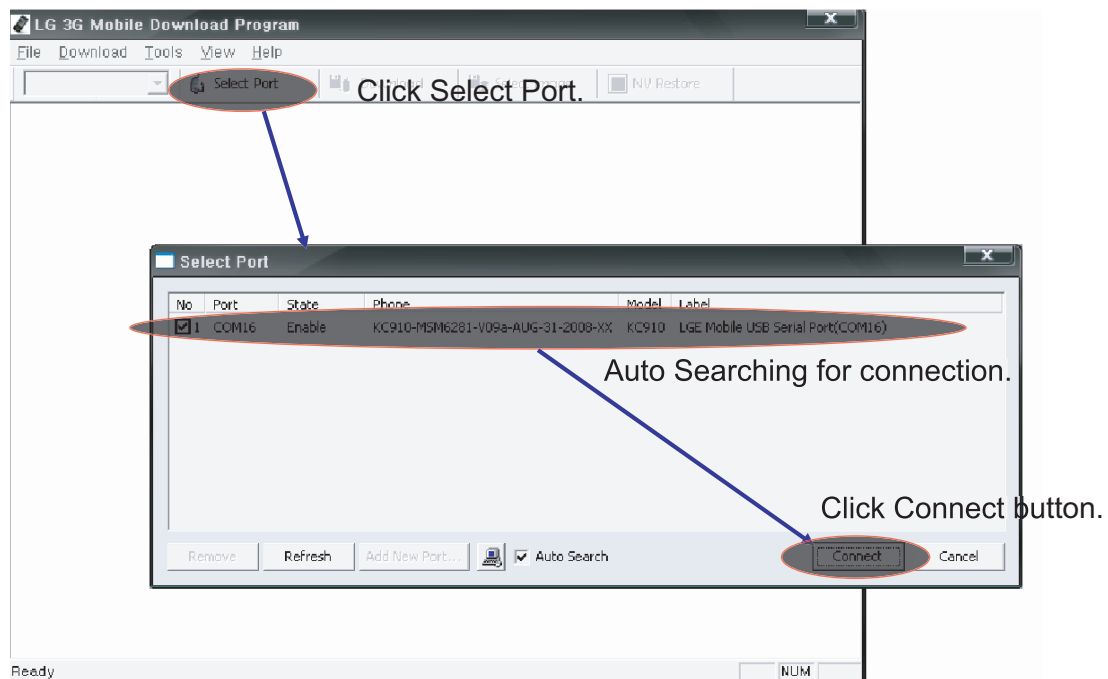


## 5. DOWNLOAD

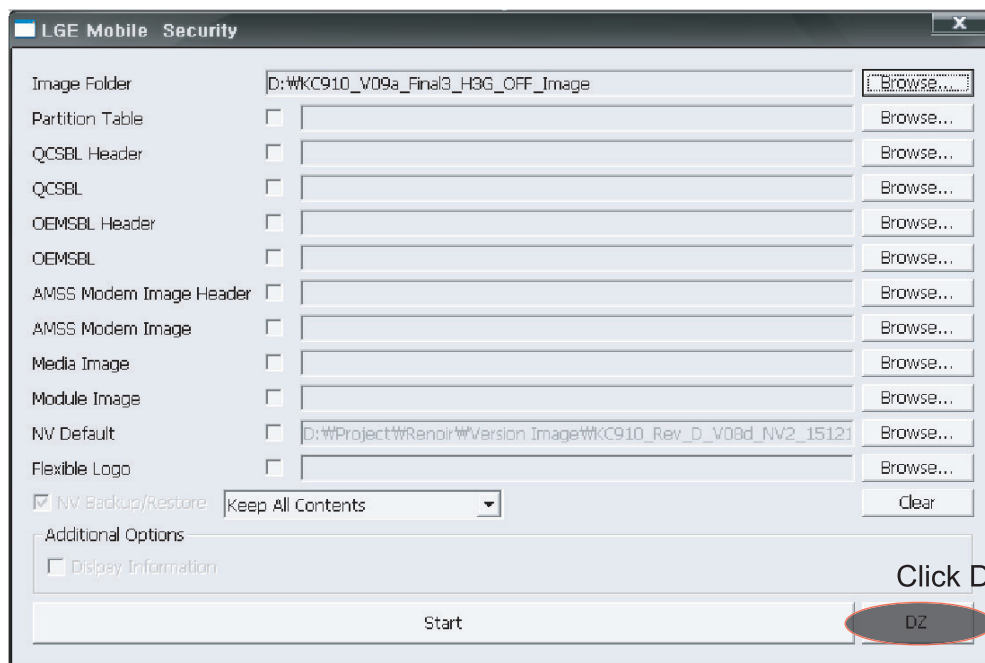
## 5. DOWNLOAD

### 5.1 Connecting to PC

- Connect the KC910 phone to your desktop PC using the USB cable and run the LGMDP application.
- Click on the Select Port and then Select Port window will be pop up. Check if state shows Enable for the port to be connected for downloading images. Then click on the Connect button.

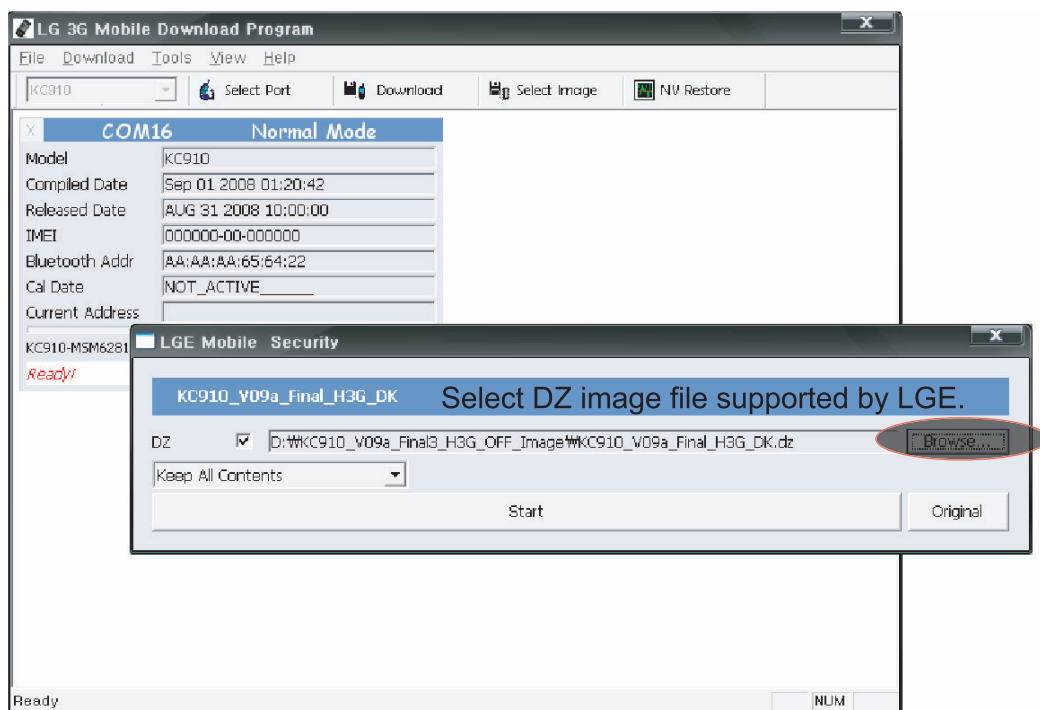


### 5.2 Select DZ Image Download mode

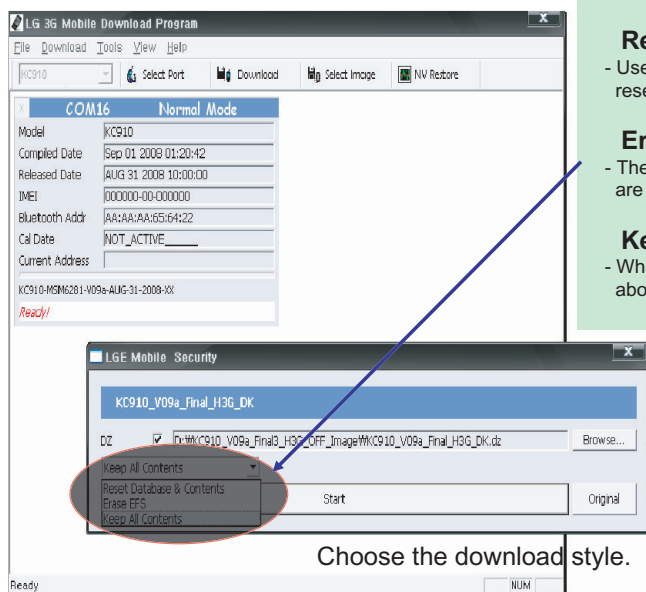


## 5. DOWNLOAD

### 5.3 Choose Binary Image



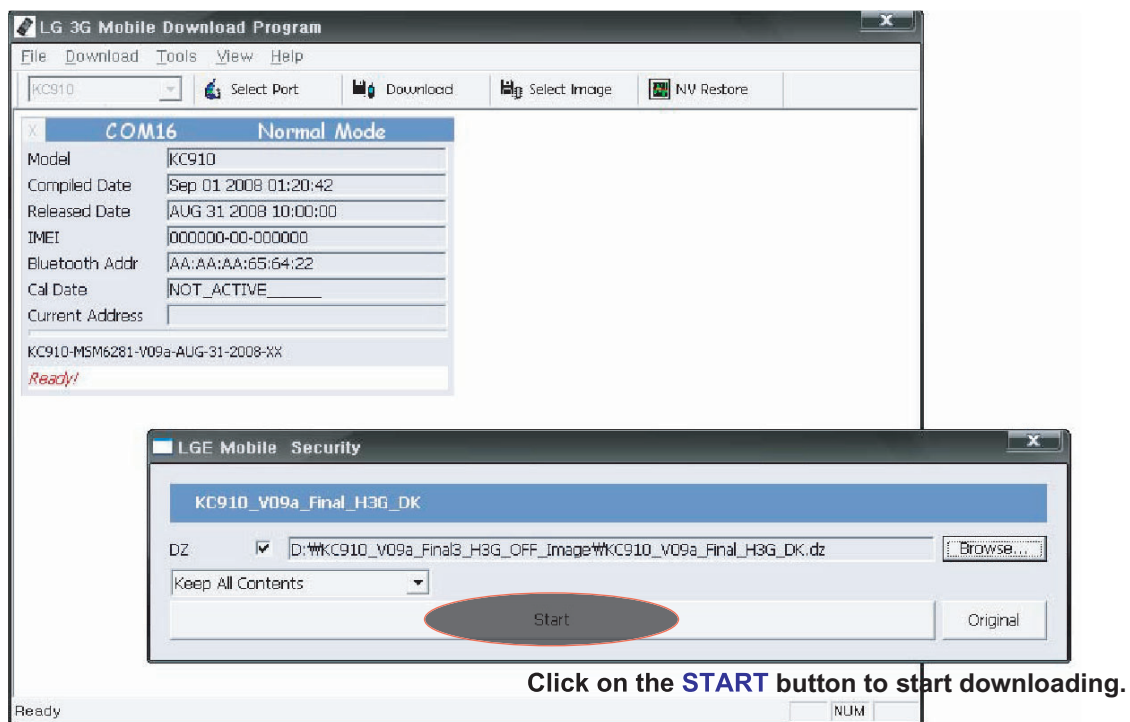
### 5.4 Choose the download style



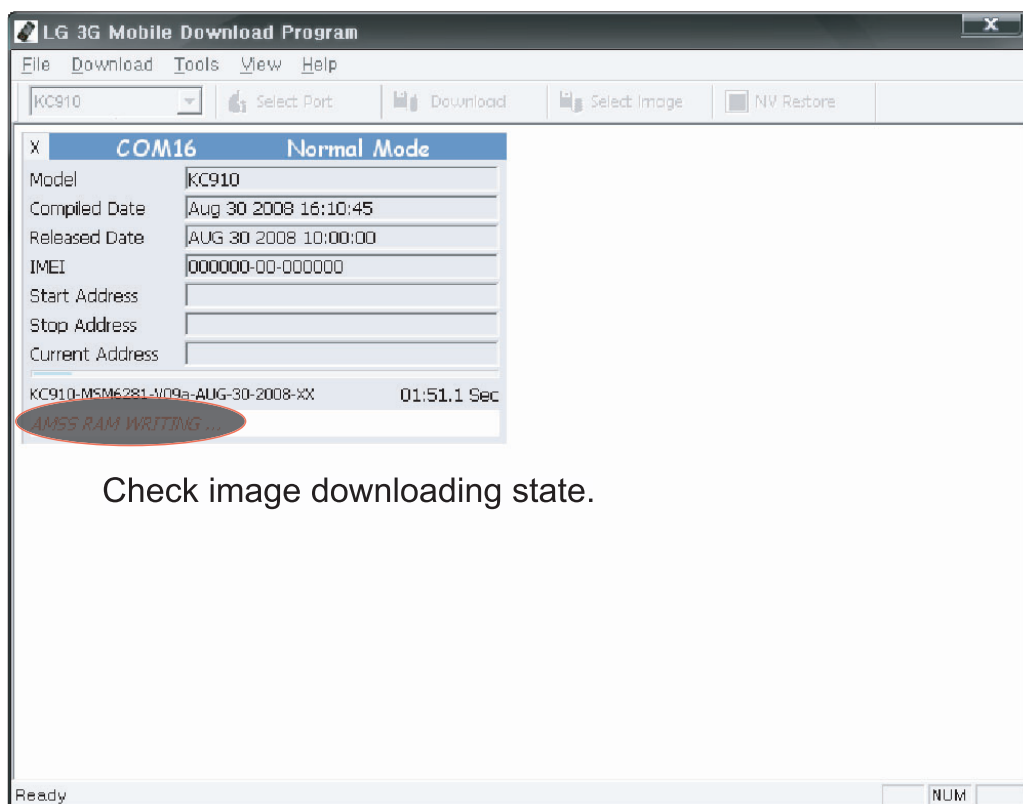
## 5. DOWNLOAD

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### 5.5 Start Downloading



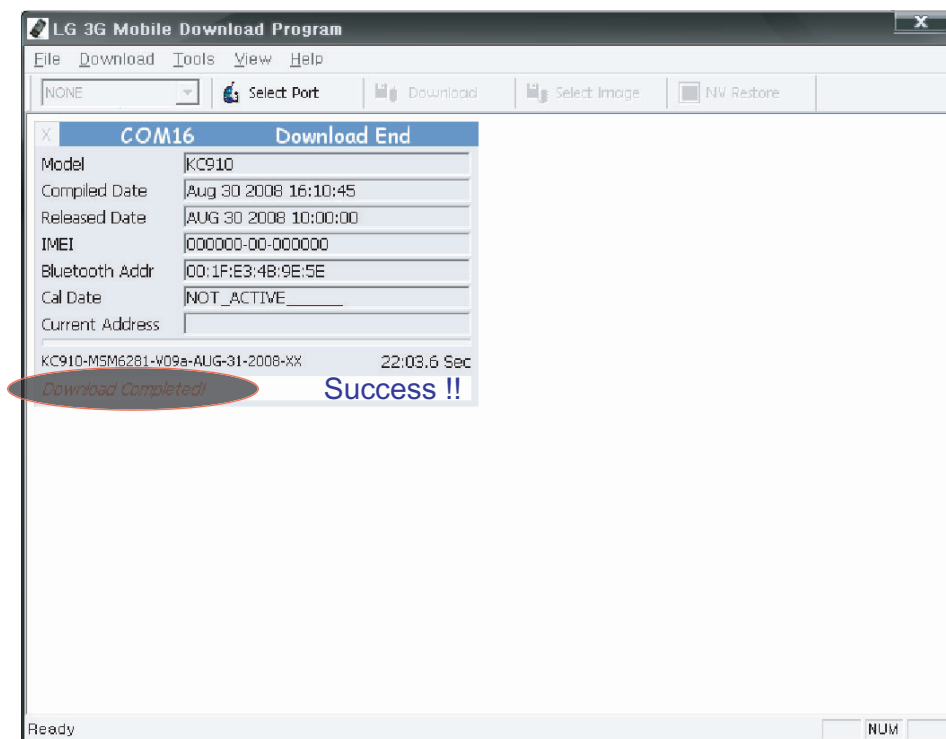
### 5.6 Check image downloading state



## 5. DOWNLOAD

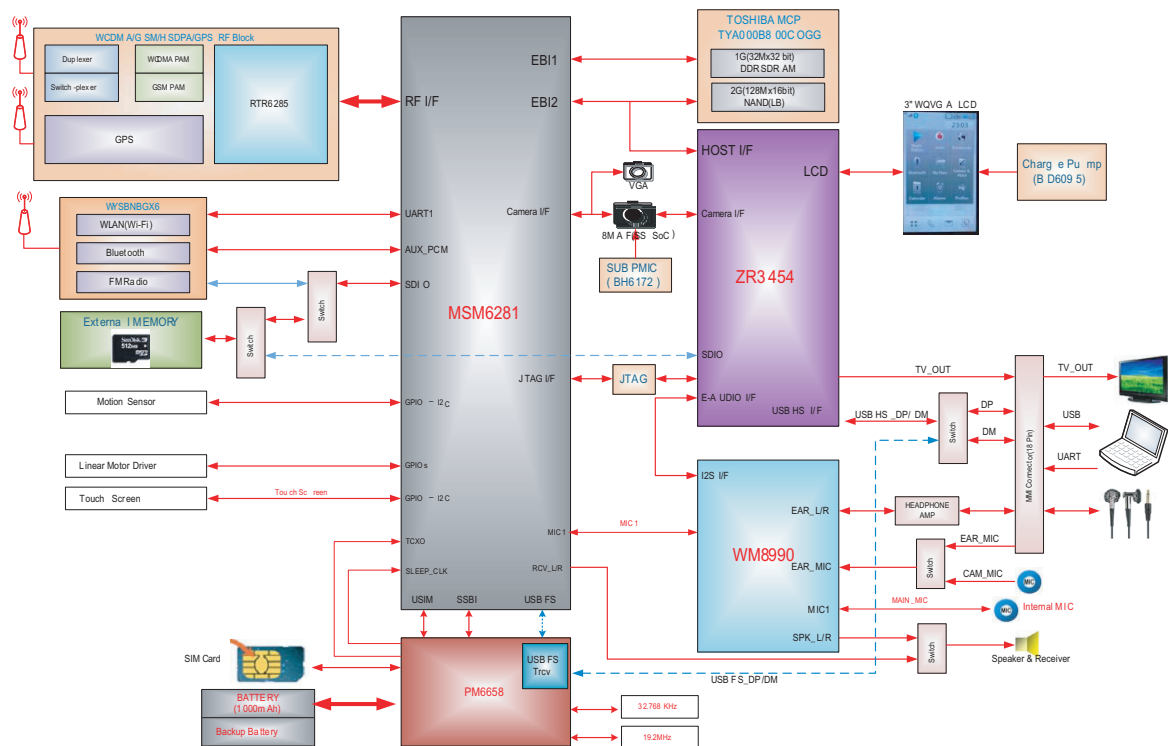
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### 5.7 Finally Download Completed



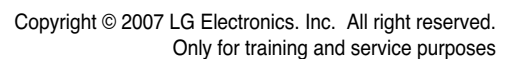
## 6. BLOCK DIAGRAM

## 1. System HW Block Diagram : Renoir Total Block Diagram



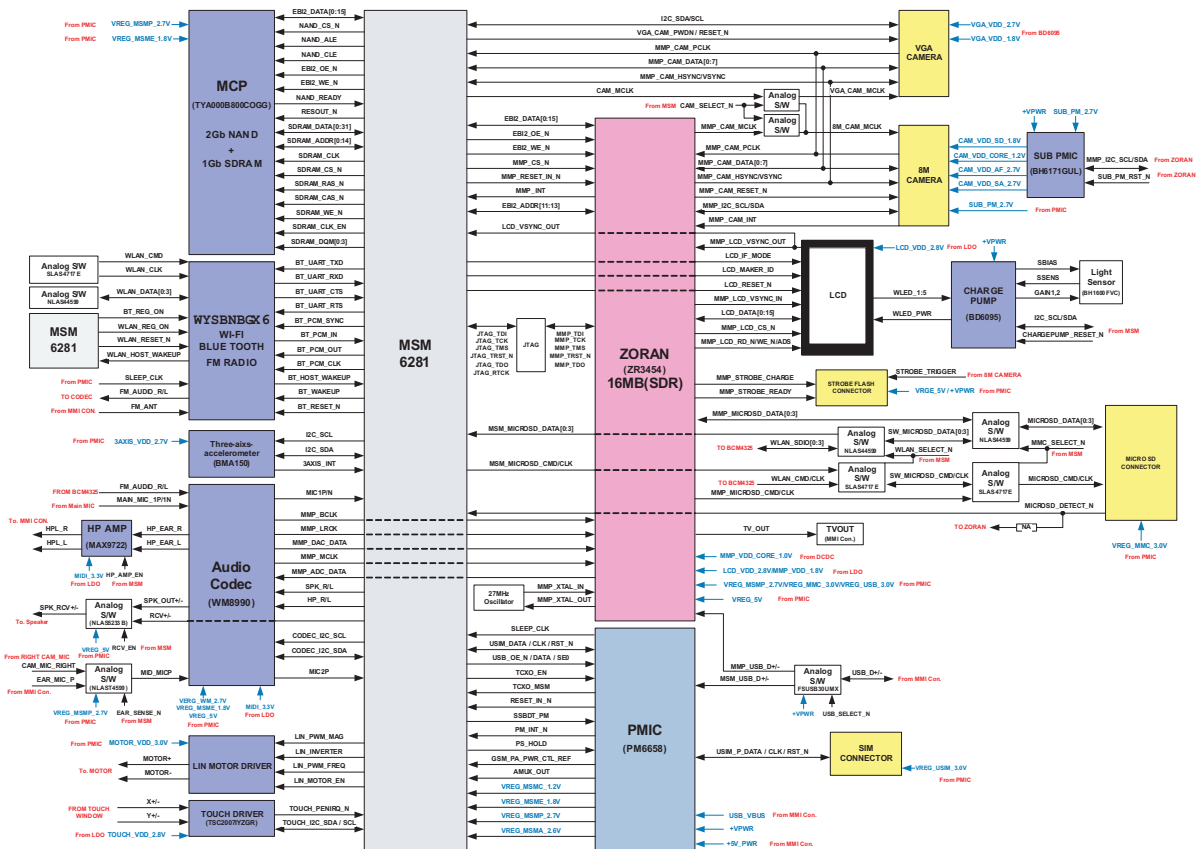


**(WCDMA RF5184 BAND EXTENSION, BAND I/II/VIII)**



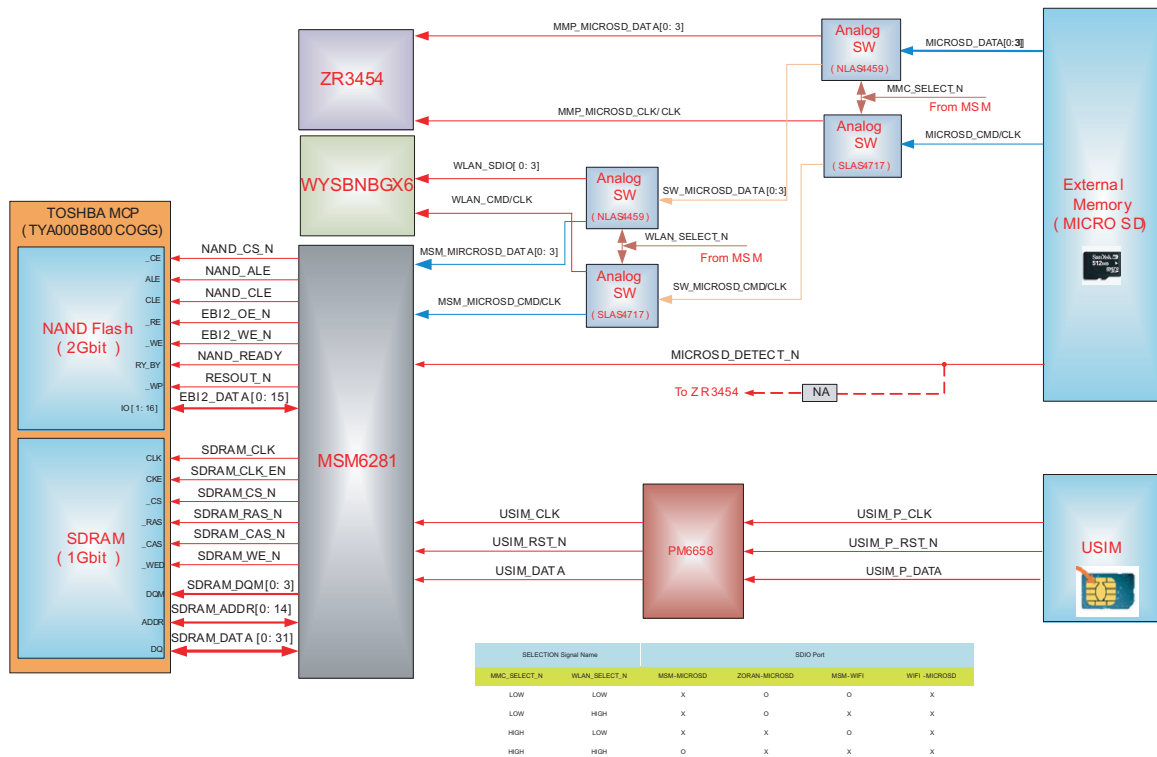
## 6. BLOCK DIAGRAM

### System HW Block Diagram : BB Block



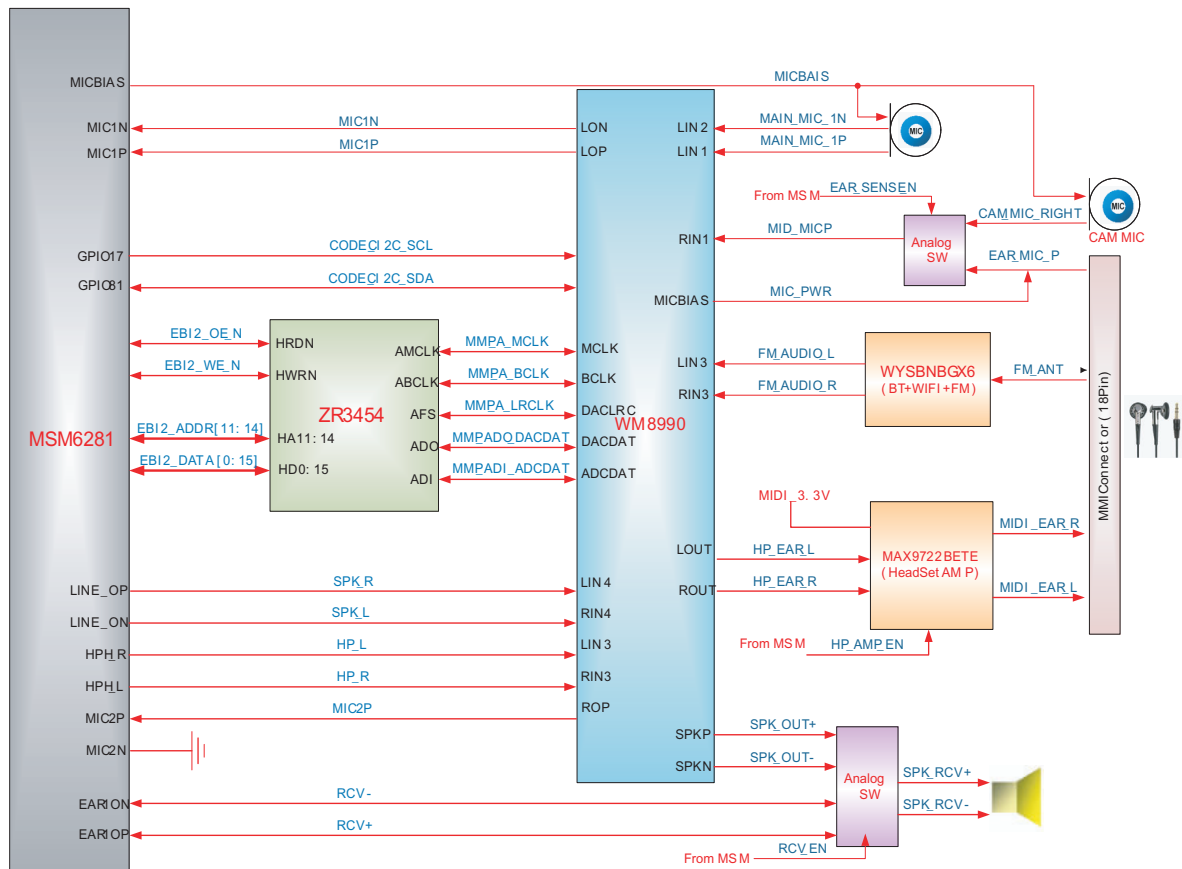
## 6. BLOCK DIAGRAM

### 3.System HW Block Diagram (Detail) : MEMORY



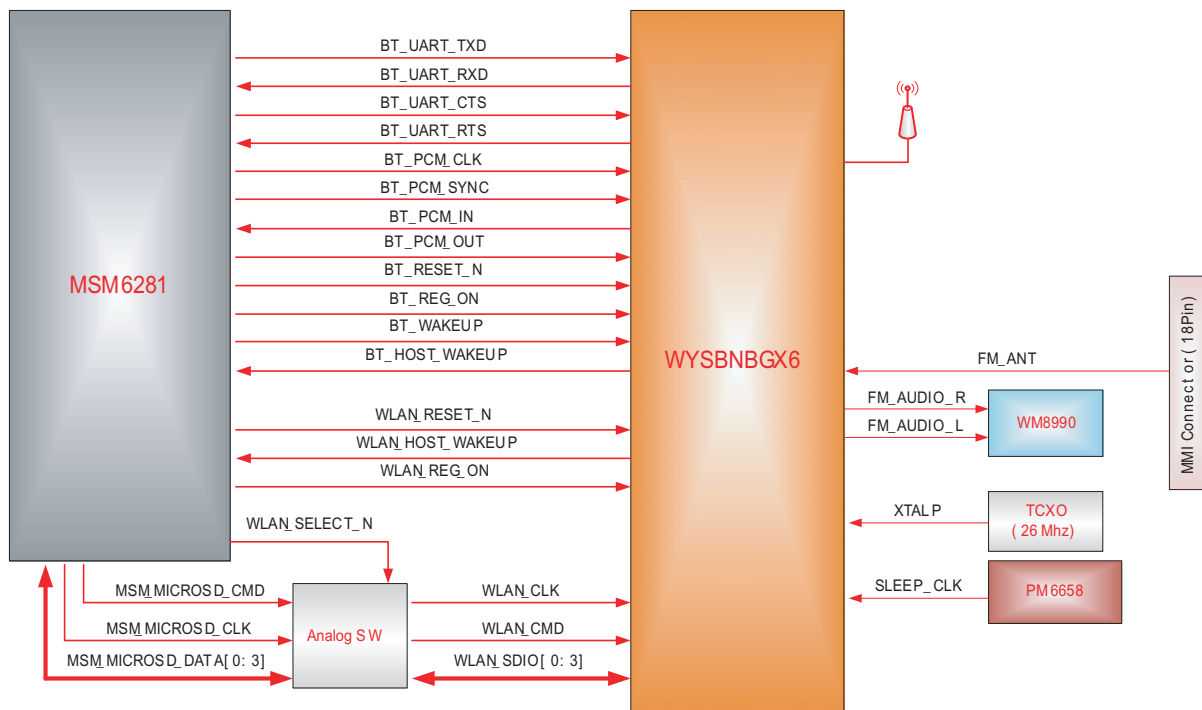
## 6. BLOCK DIAGRAM

### System HW Block Diagram (Detail) : AUDIO



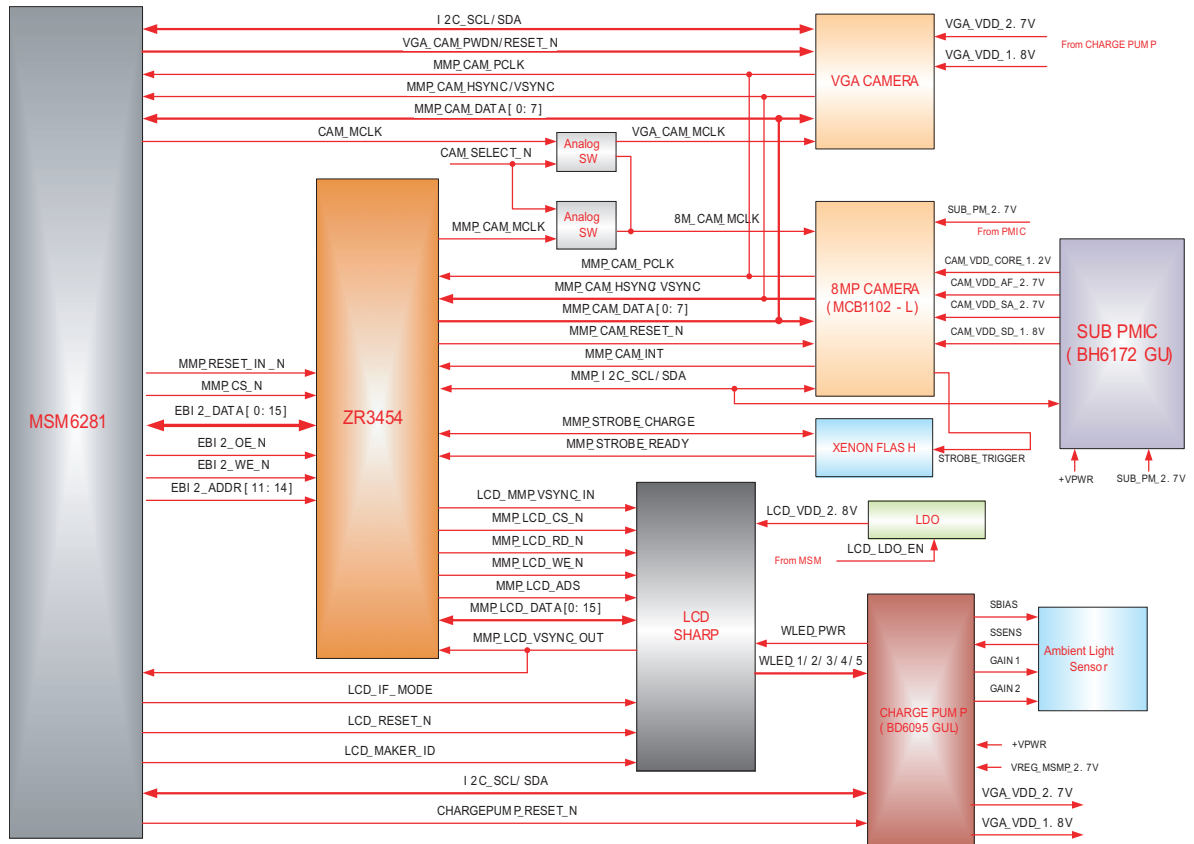
## 6. BLOCK DIAGRAM

### System HW Block Diagram (Detail) : BT & Wi-Fi & FM Radio



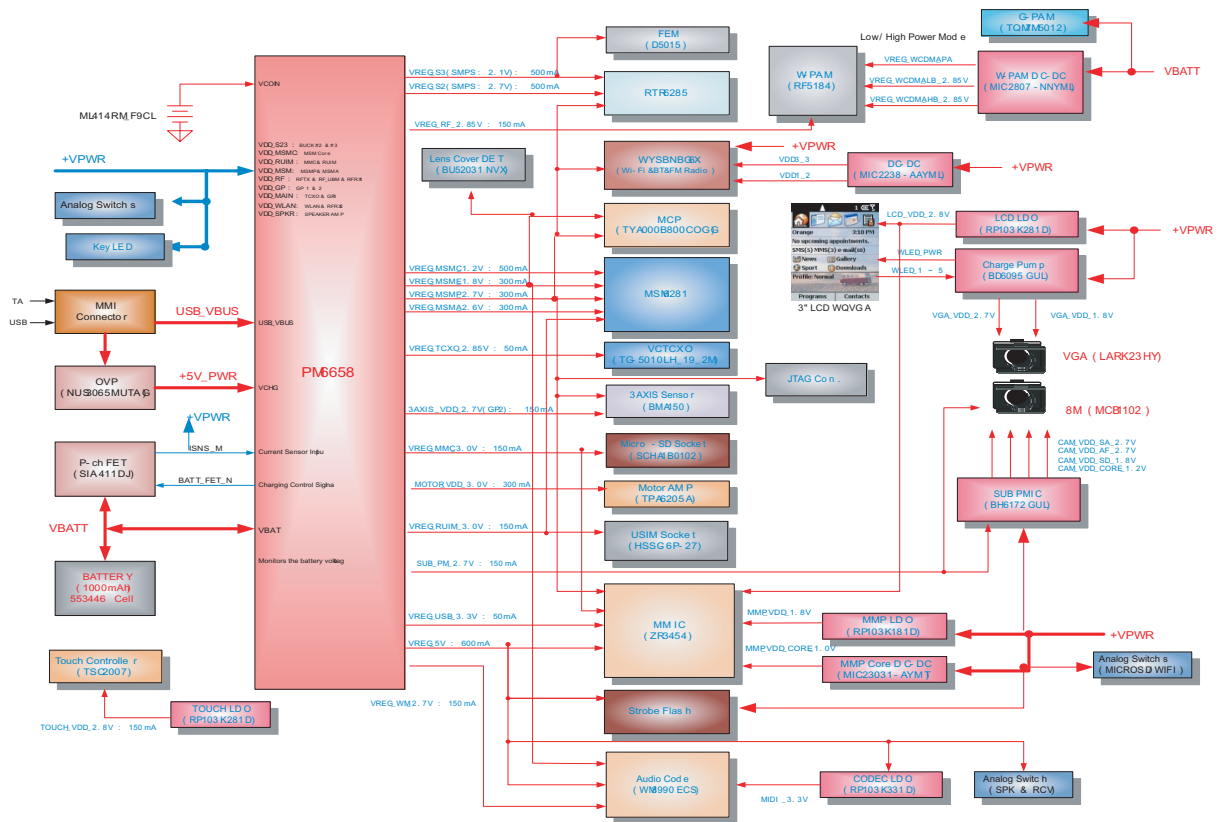
## 6. BLOCK DIAGRAM

### System HW Block Diagram (Detail) : VISUAL

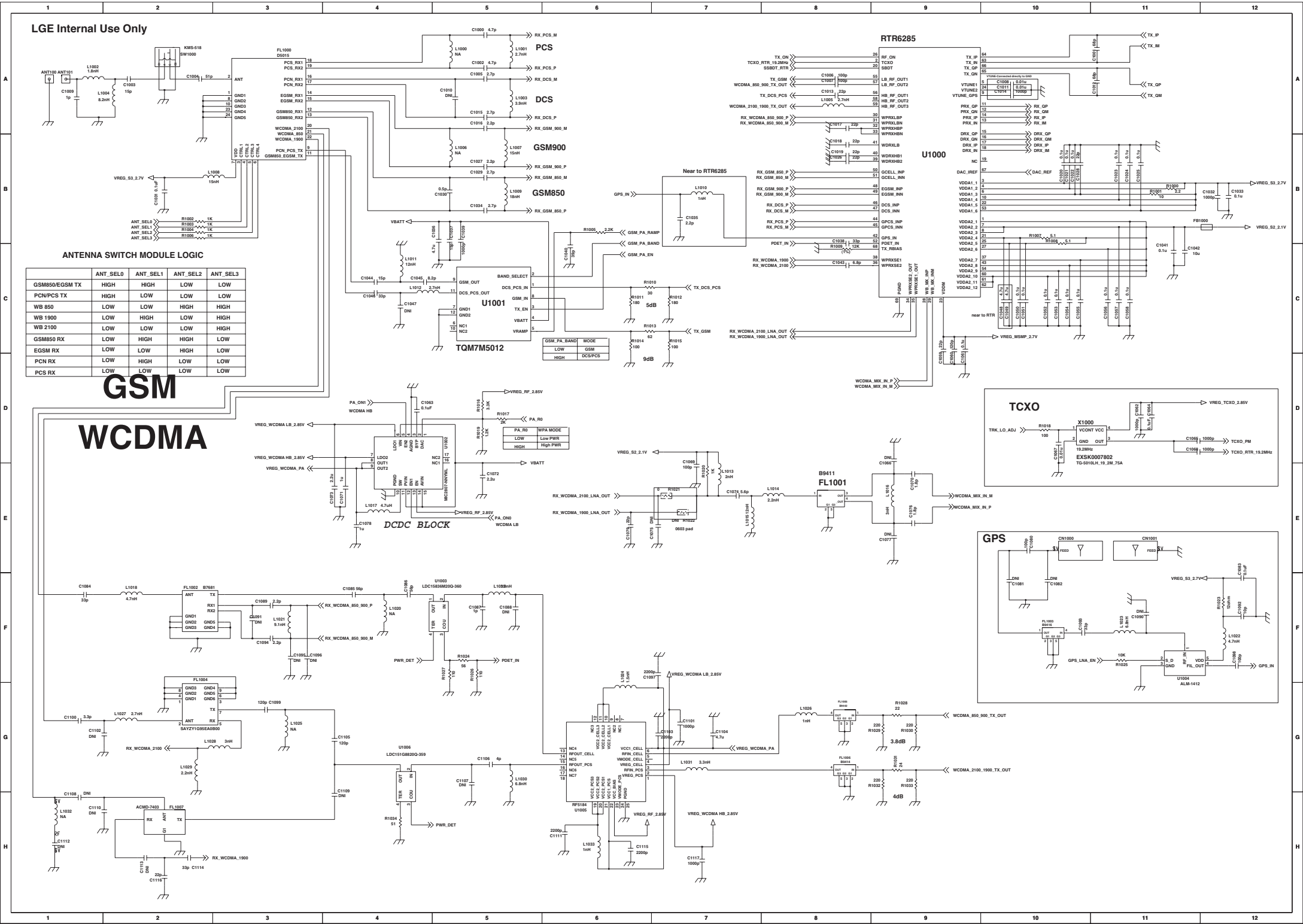


## 6. BLOCK DIAGRAM

### System HW Block Diagram (Detail) : POWER

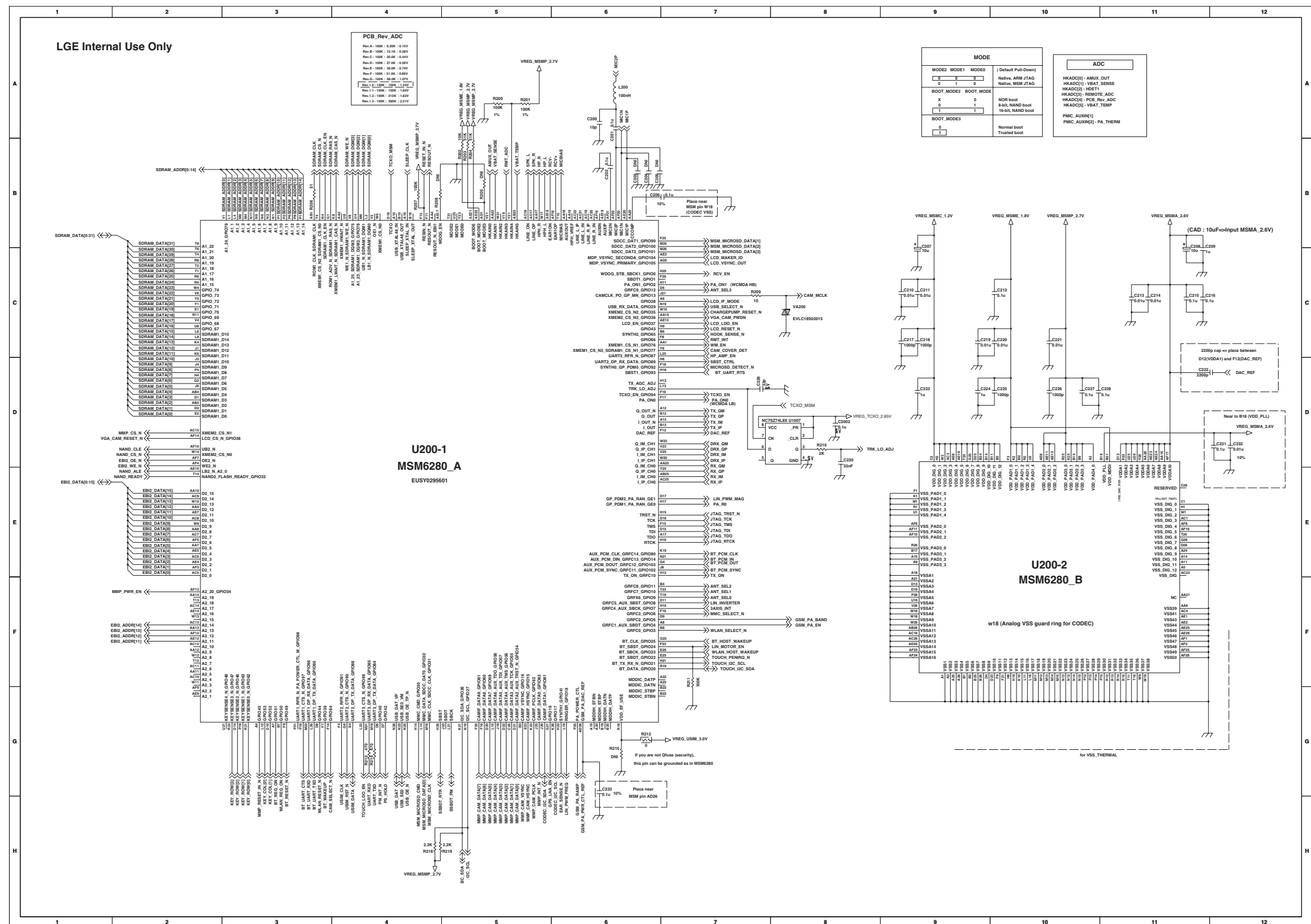


7. CIRCUIT DIAGRAM

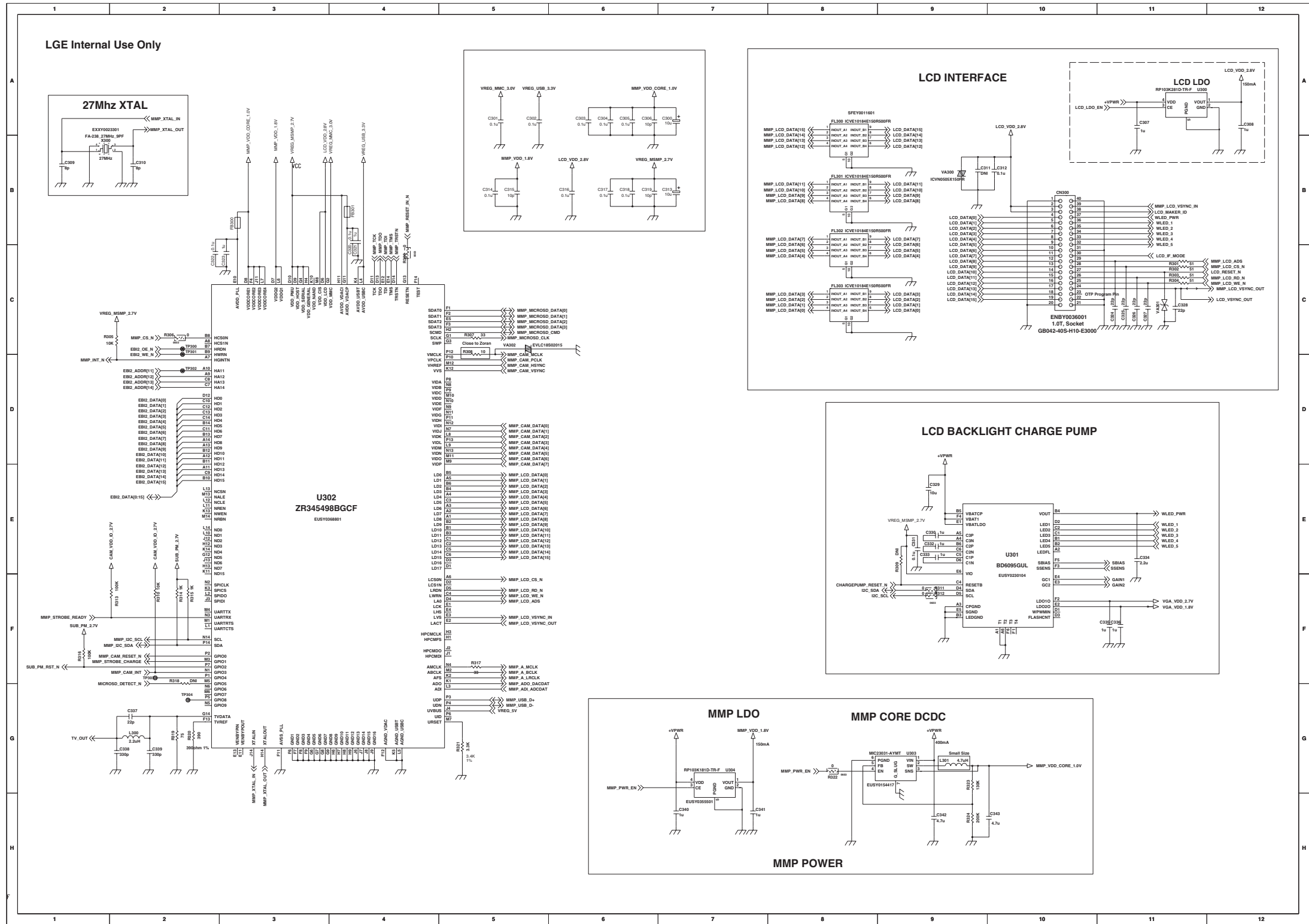




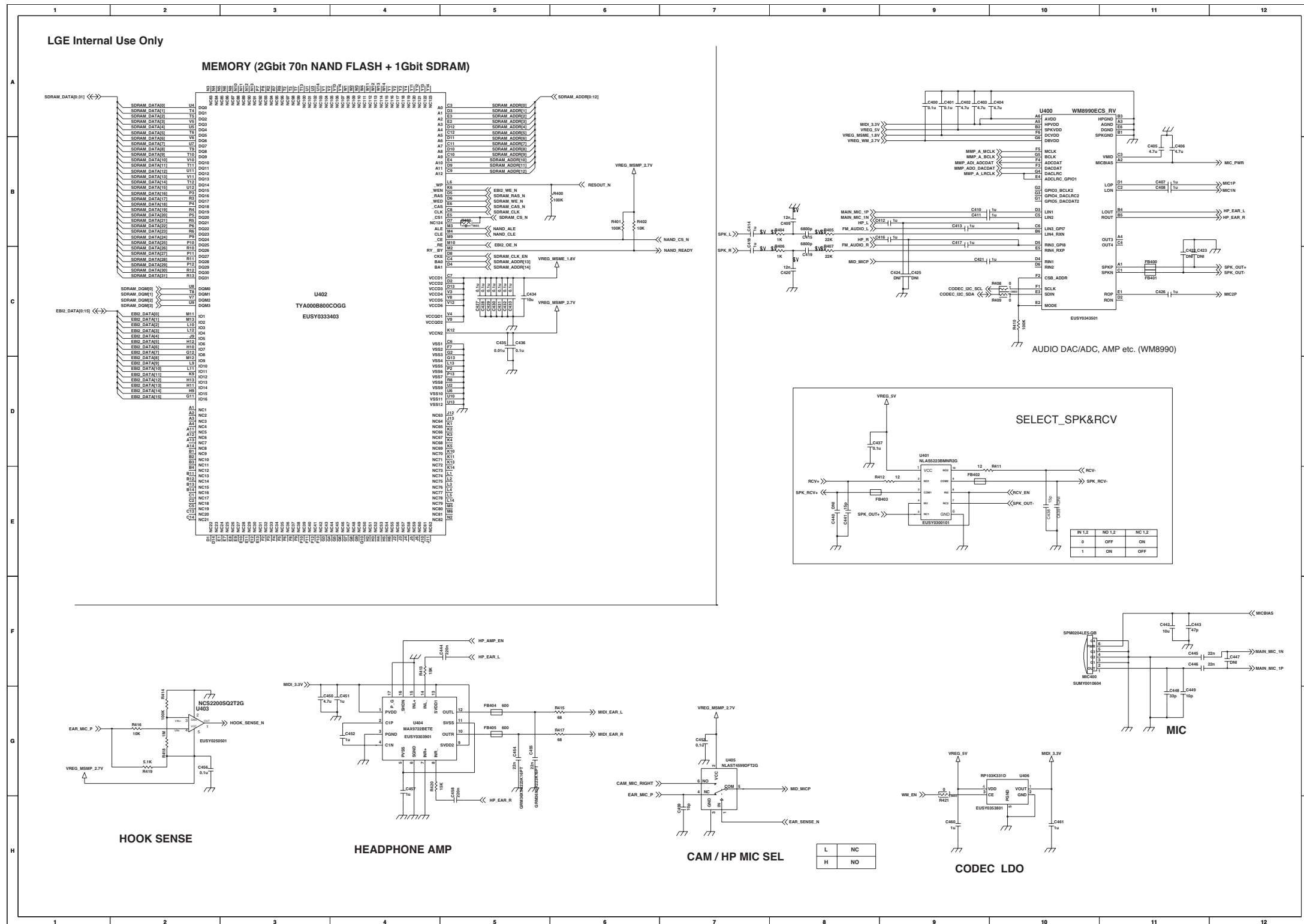
## 7. CIRCUIT DIAGRAM



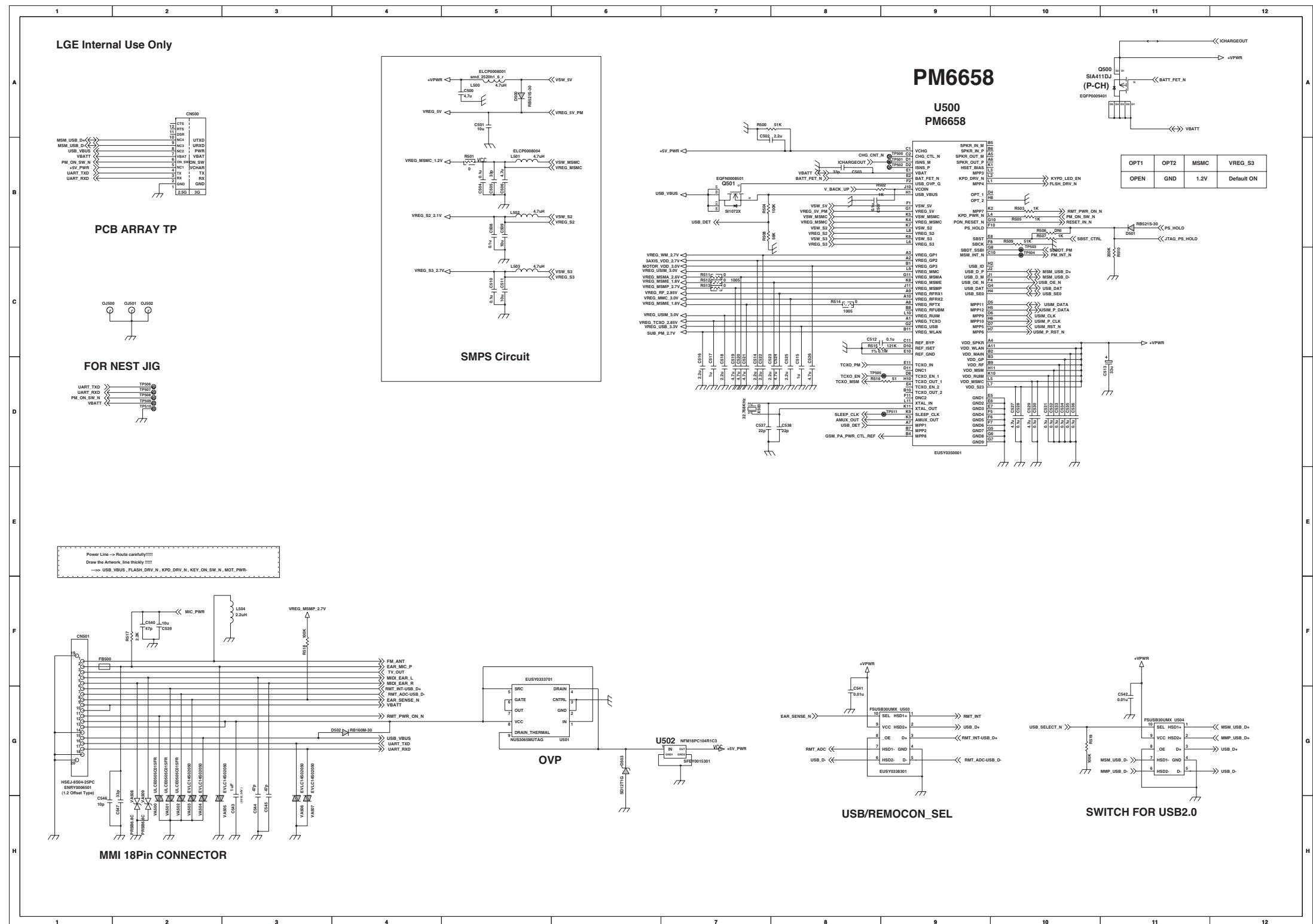
## 7. CIRCUIT DIAGRAM



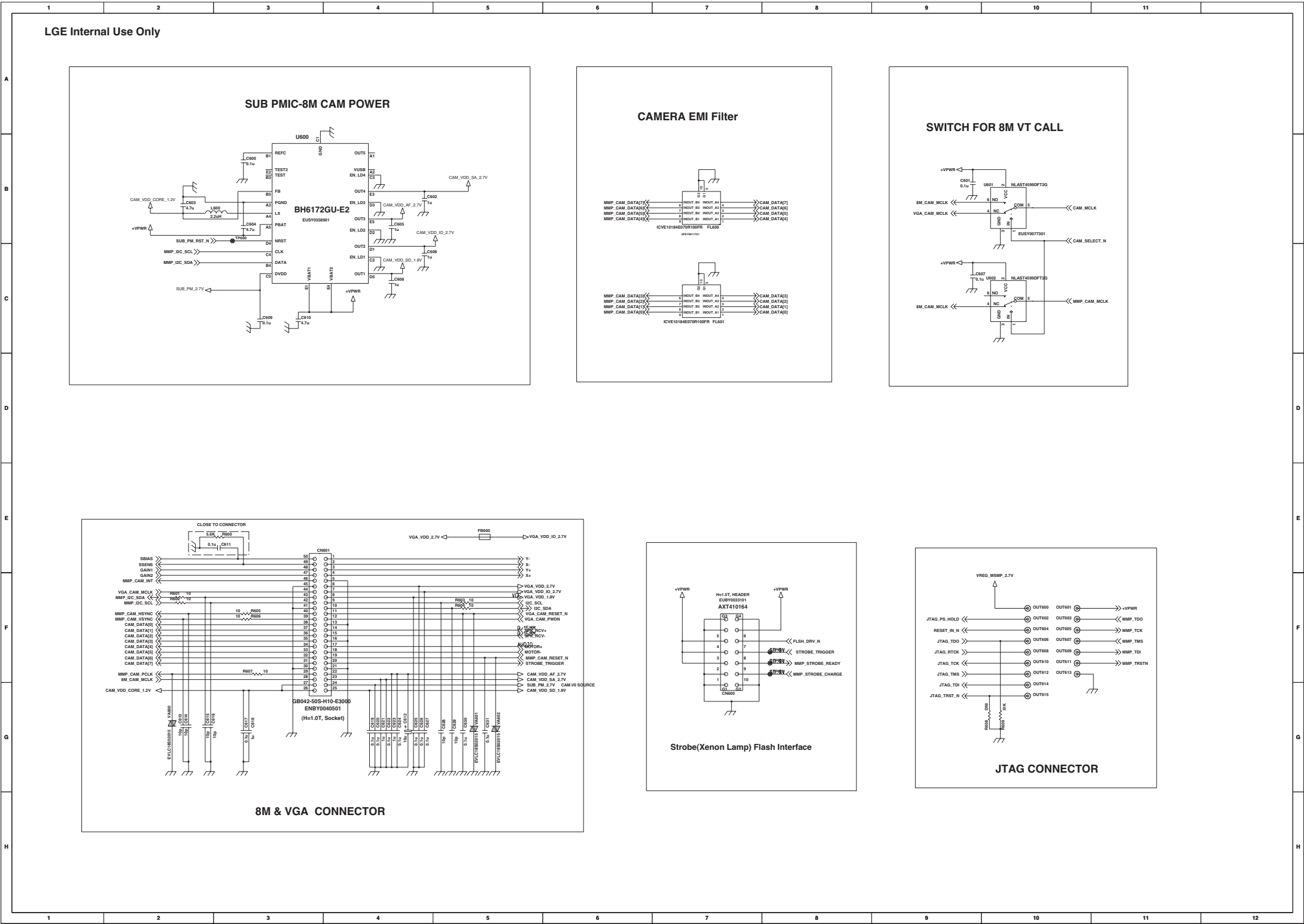
## 7. CIRCUIT DIAGRAM



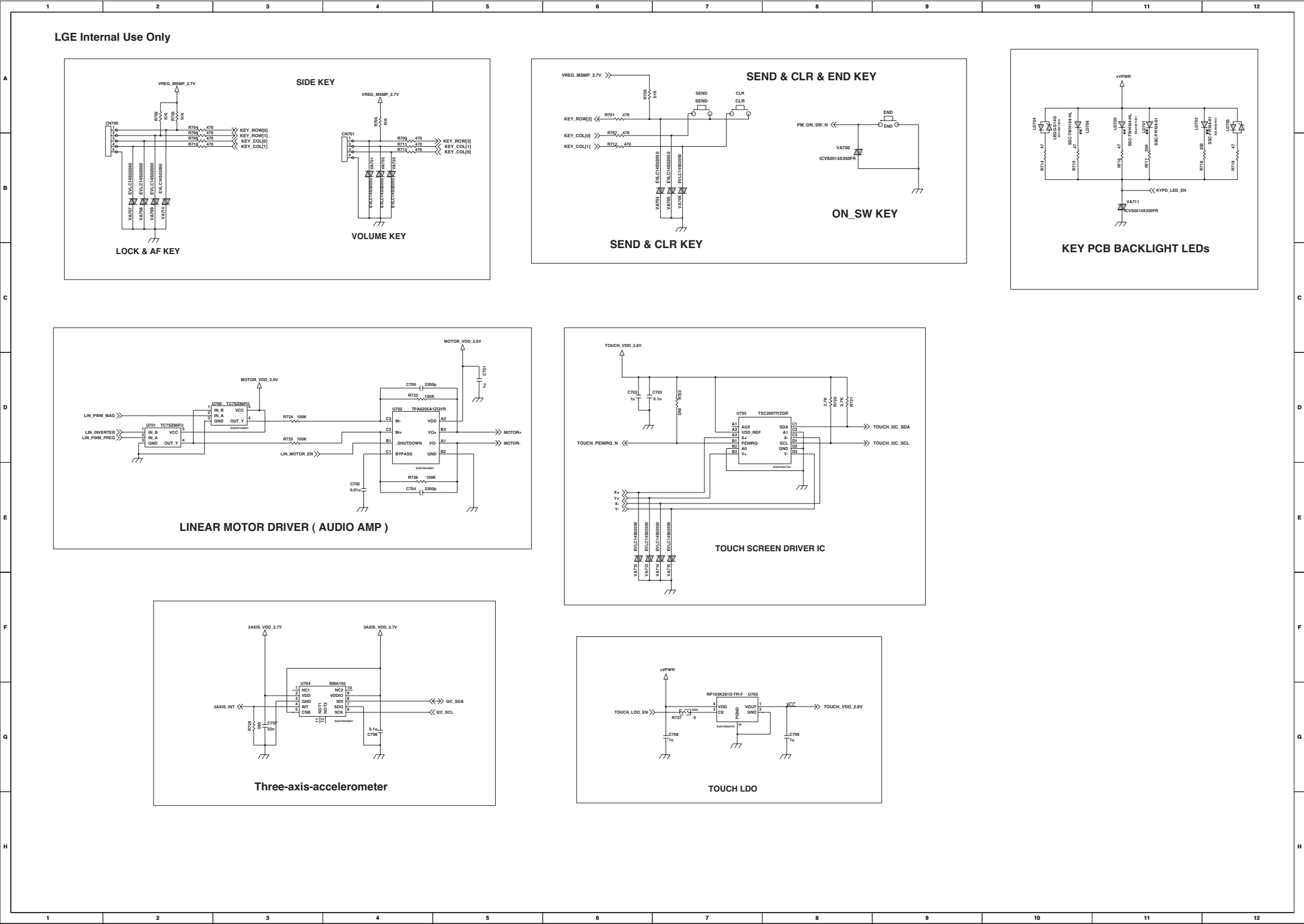
## 7. CIRCUIT DIAGRAM



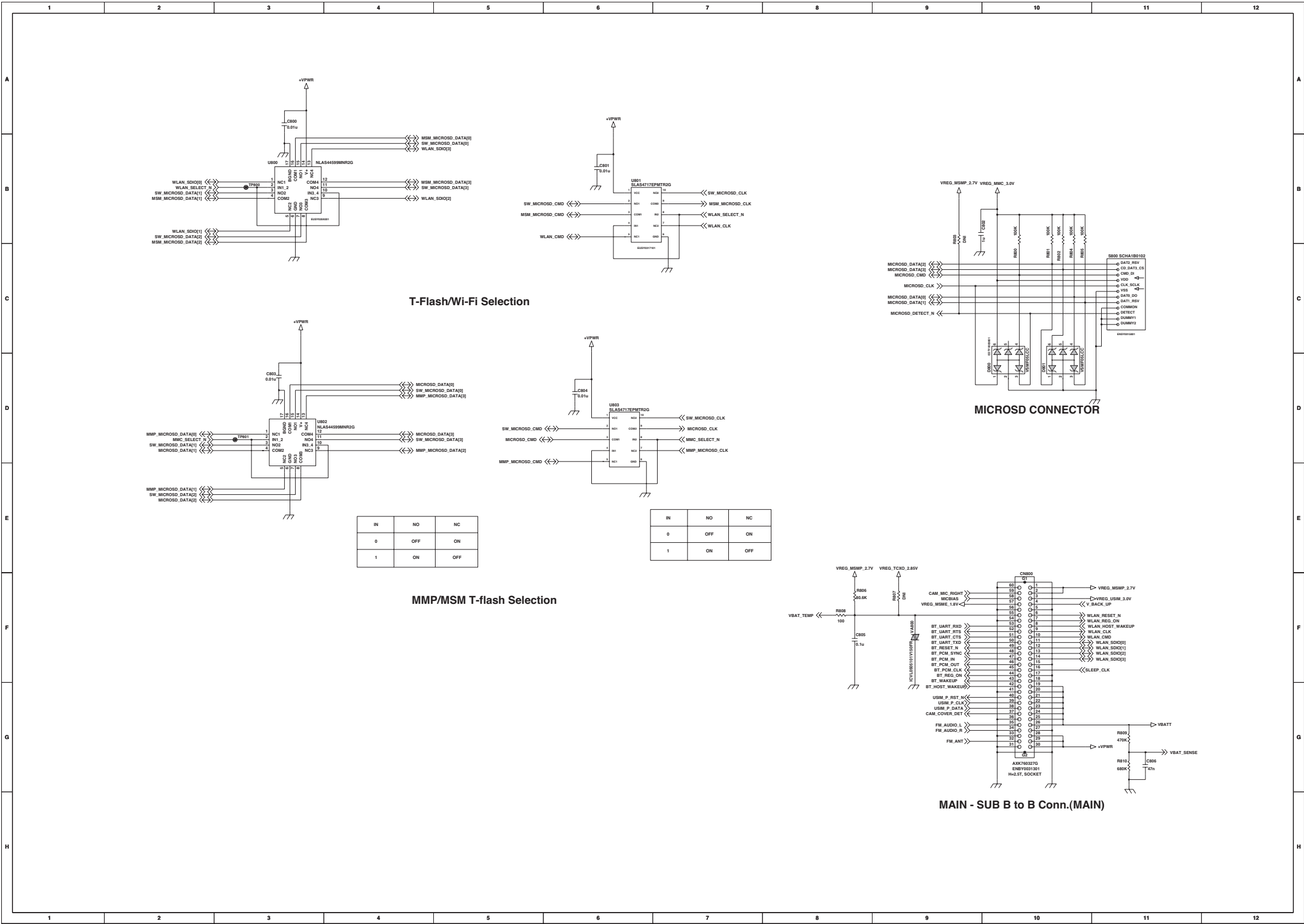
# 7. CIRCUIT DIAGRAM



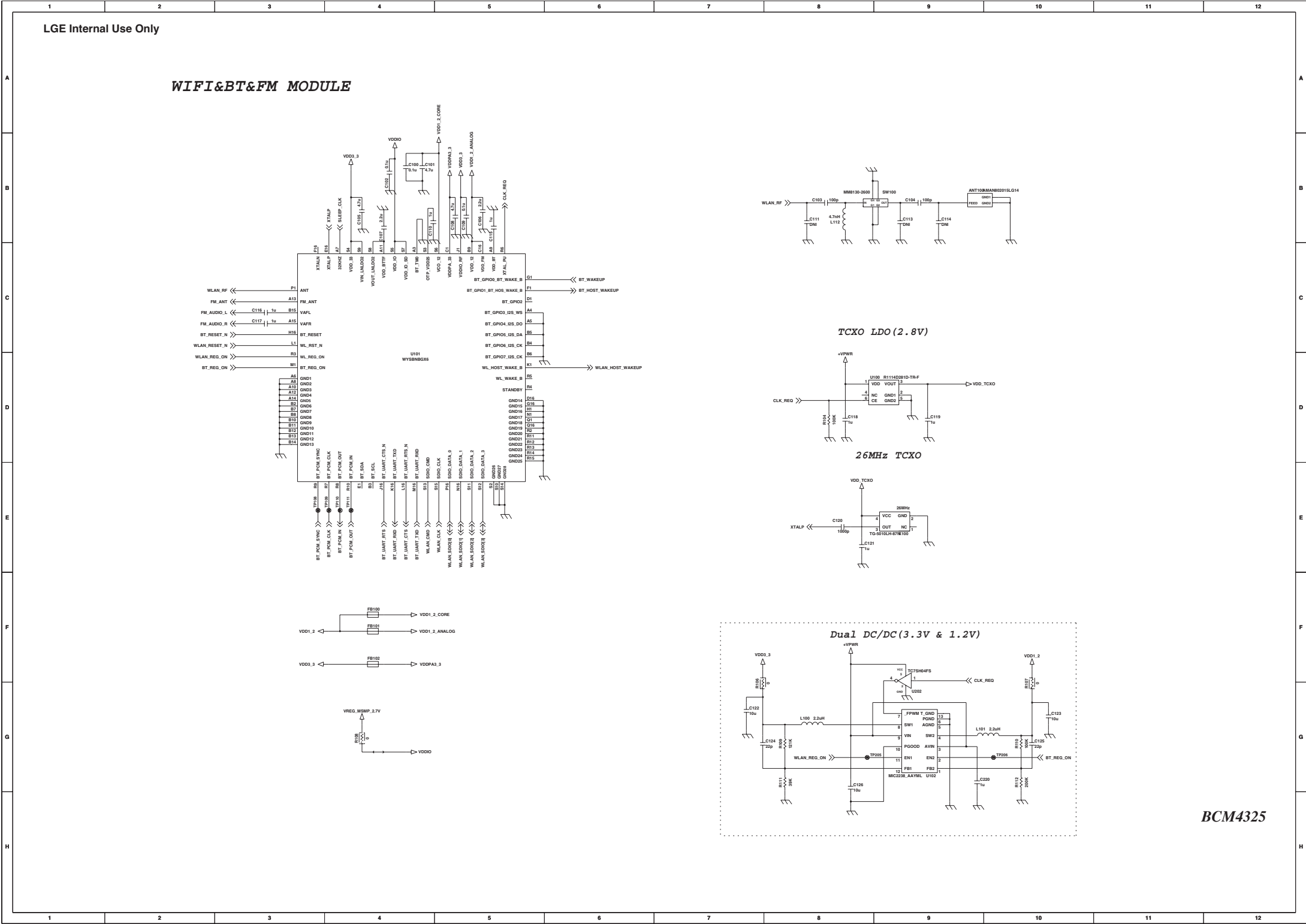
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

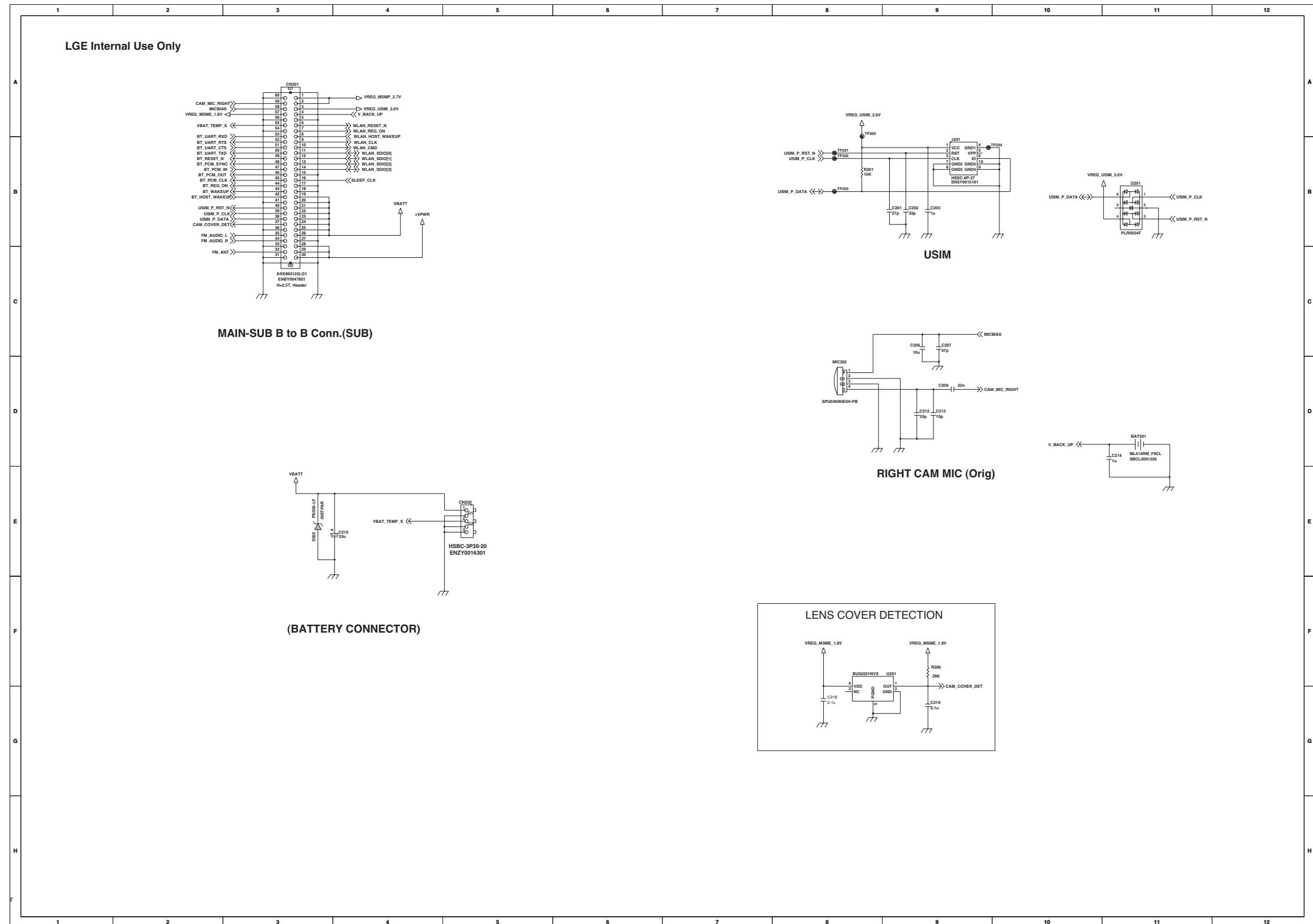


7. CIRCUIT DIAGRAM

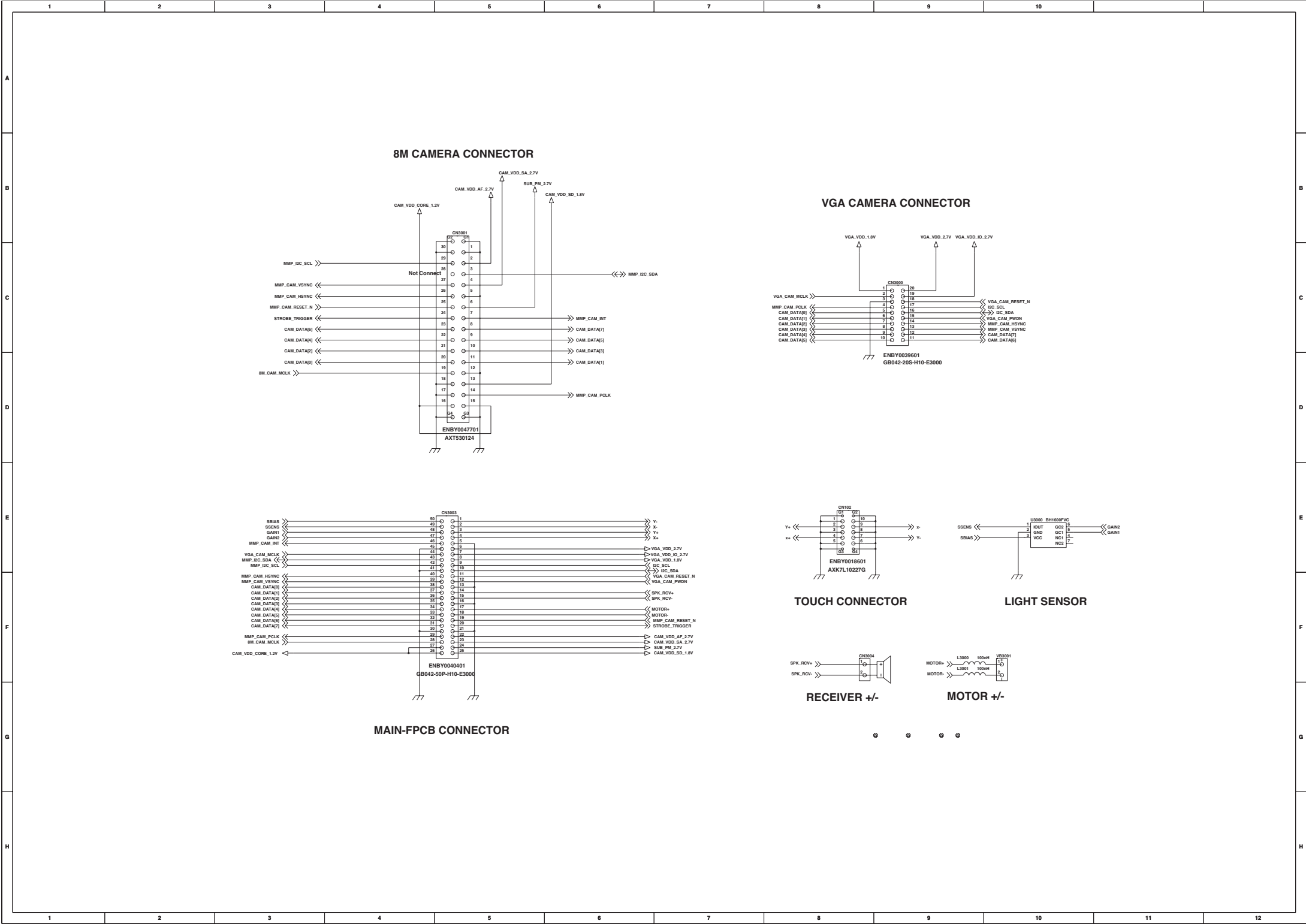




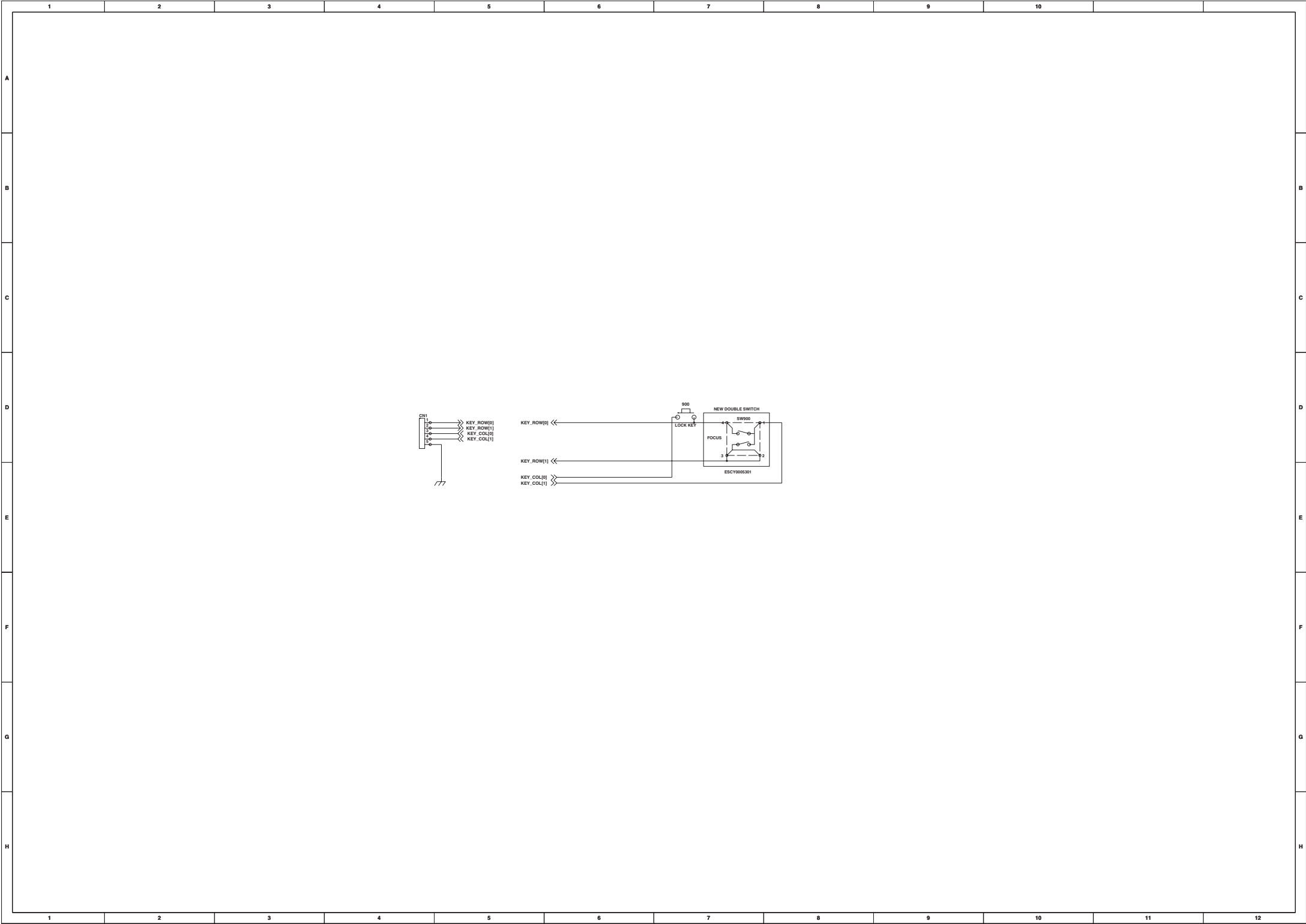
## 7. CIRCUIT DIAGRAM



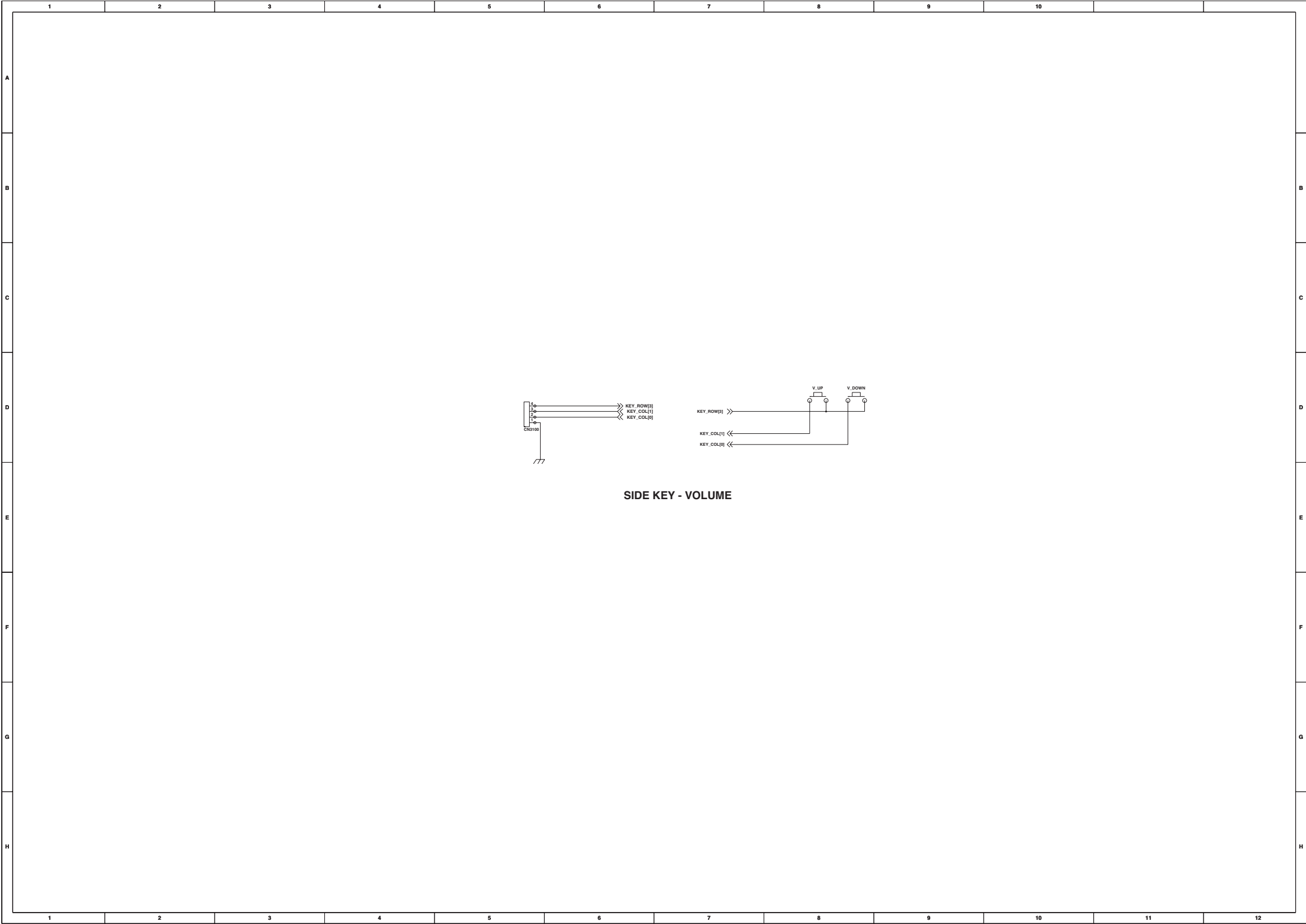
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM



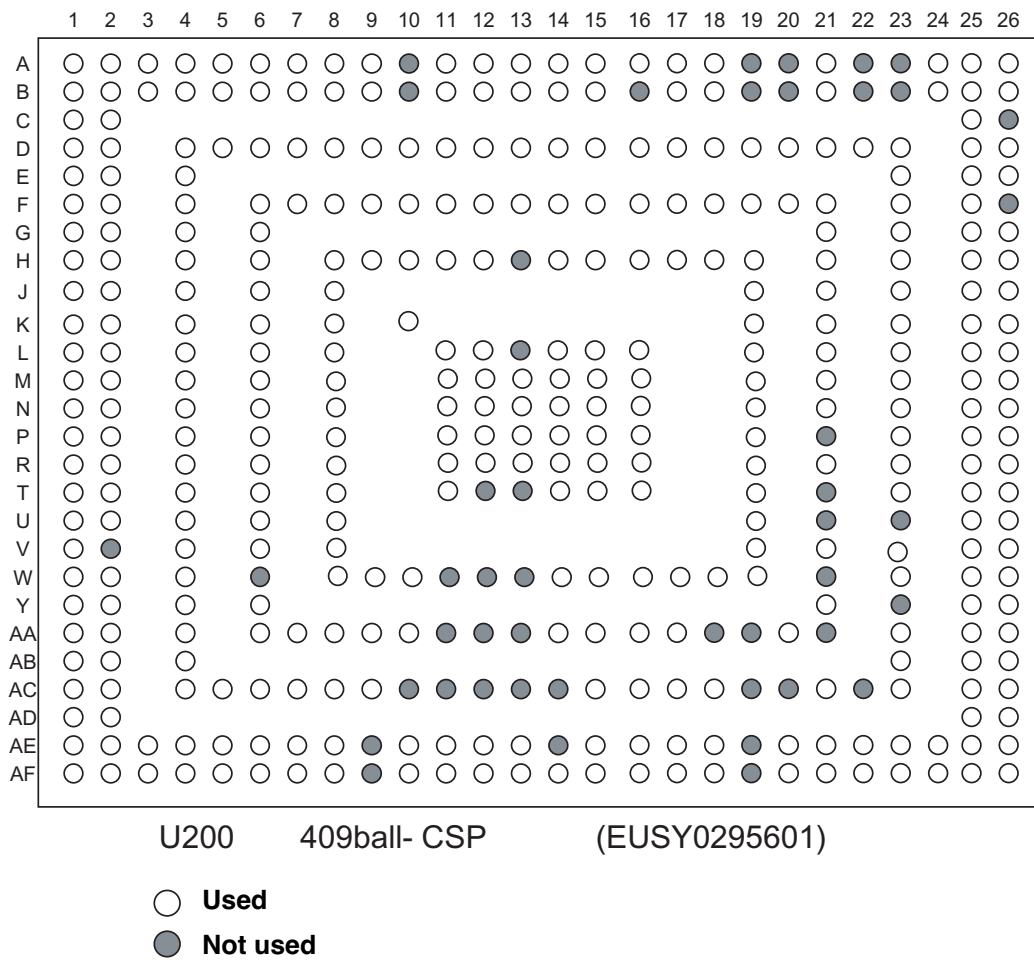
7. CIRCUIT DIAGRAM





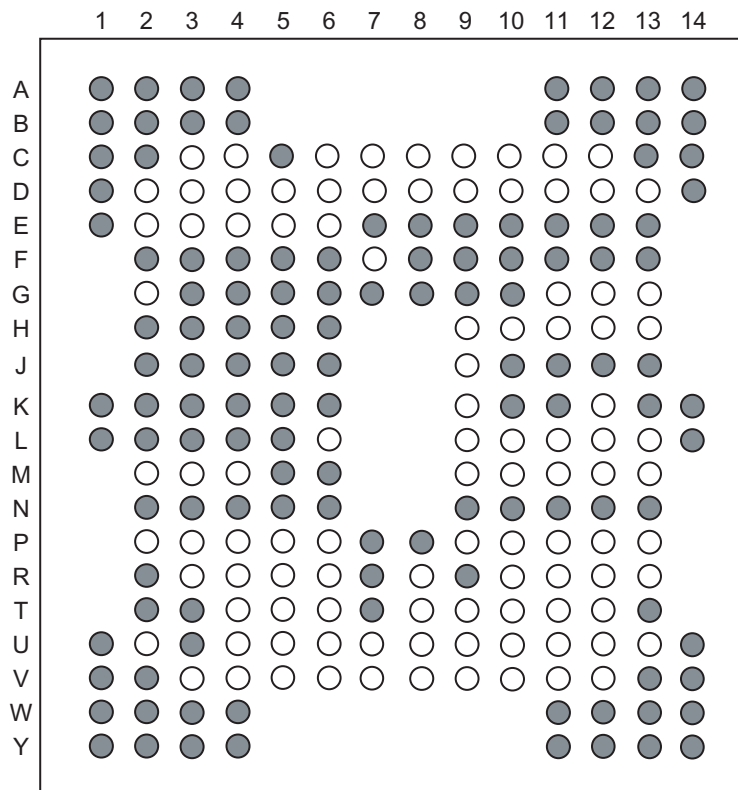
## 8. BGA IC PIN MAP

### MODEM CHIP(MSM6280) BGA Pin Map



## 8. BGA IC PIN MAP

### MEMORY(TYA000B800COGG) BGA Pin Map



U402      P-TFBG A225      (EUSY0333403)

- Used
- Not used

### PMIC(PM6658) BGA Pin Map

	1	2	3	4	5	6	7	8	9	10	11
A	○	○	○	○	●	●	○	○	○	○	○
B	○	○	○	○	●	●	●	●	○	●	○
C	○	○								○	○
D	○	○		●	○	○	○	○		○	●
E	○	○		●	○	○	○	○		○	○
F	○	○		○	○	○	○	○		○	●
G	○	○		○	○	○	○	○		○	○
H	○	●		○	○	○	○	○		○	○
J	○	○								○	○
K	●	○	○	○	○	○	○	○	○	○	○
L	○	○	●	○	○	○	○	○	○	○	○

U500

97-pin CSP

(EUSY0350001)

○ Used

● Not used



## 8. BGA IC PIN MAP

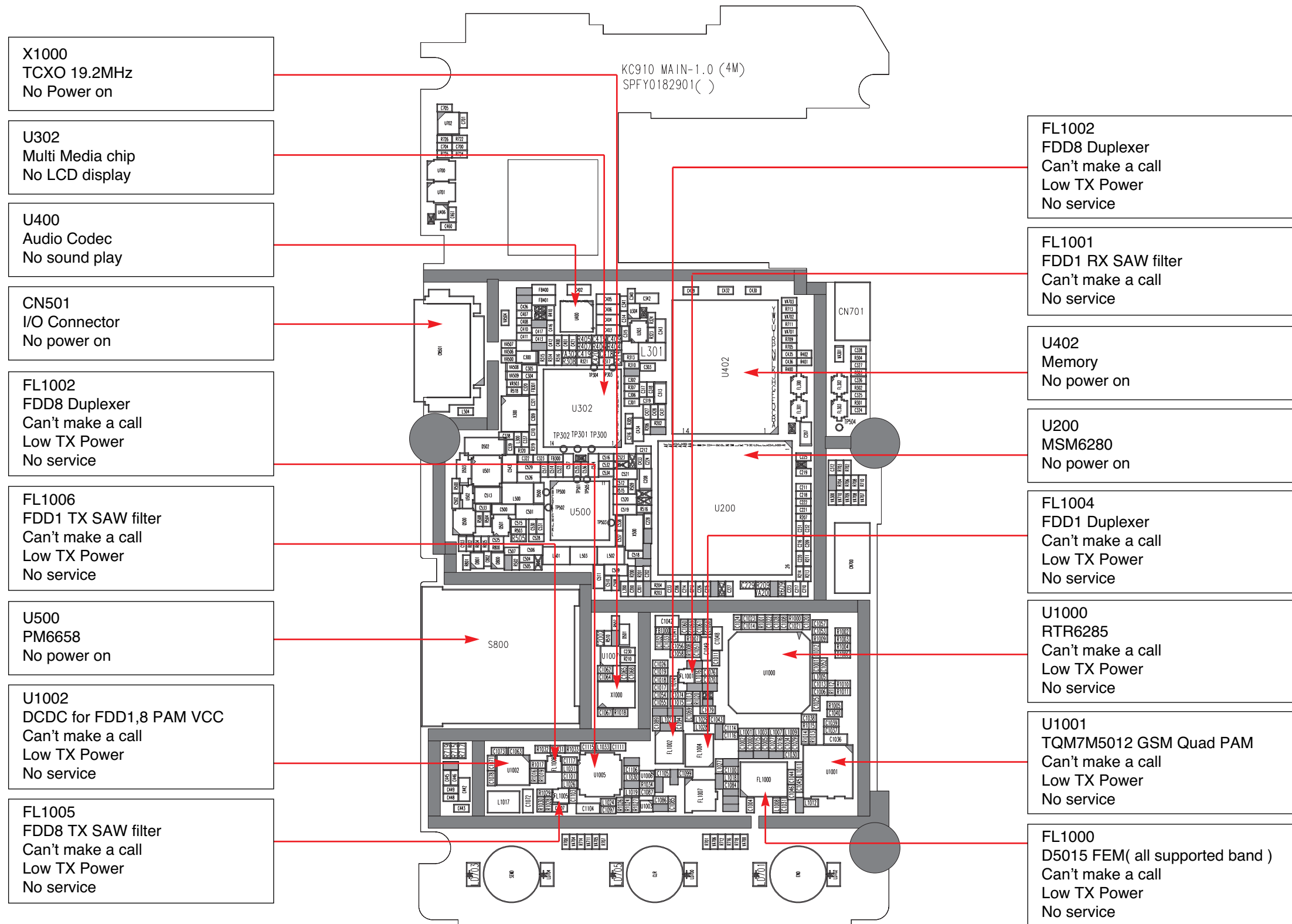
### MULTI MEDIA CHIP(ZR3454) BGA pin Map

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	○	○	○	○	○	○	○	●	○	○	○	○	○	○
B	○	○	○	○	○	○	○	○	○	○	○	○	○	○
C	○	○	○	○	○	○	○	○	○	○	○	○	○	○
D	●	●	●	○	○	○	○	○	○	○	○	○	○	○
E	○	○	○	○	○					○	●	○	●	○
F	○	○	○	○		○	○	○	○		○	○	○	●
G	○	○	●	○		○	○	○	○		○	●	○	○
H	●	○	●	○		○	○	○	○		○	●	●	○
J	●	●	●	○		○	○	○	○		○	●	●	○
K	○	○	●	○	○					●	●	○	●	●
L	●	●	○	○	○	○	○	○	○	●	●	●	●	●
M	●	○	○	●	○	●	○	○	○	●	○	○	●	●
N	○	●	○	○	●	●	○	●	●	●	●	○	○	○
P	○	○	○	○	○	●	○	●	●	○	●	○	○	○

U302                      180ball-FBGA                      (EUSY0368801)

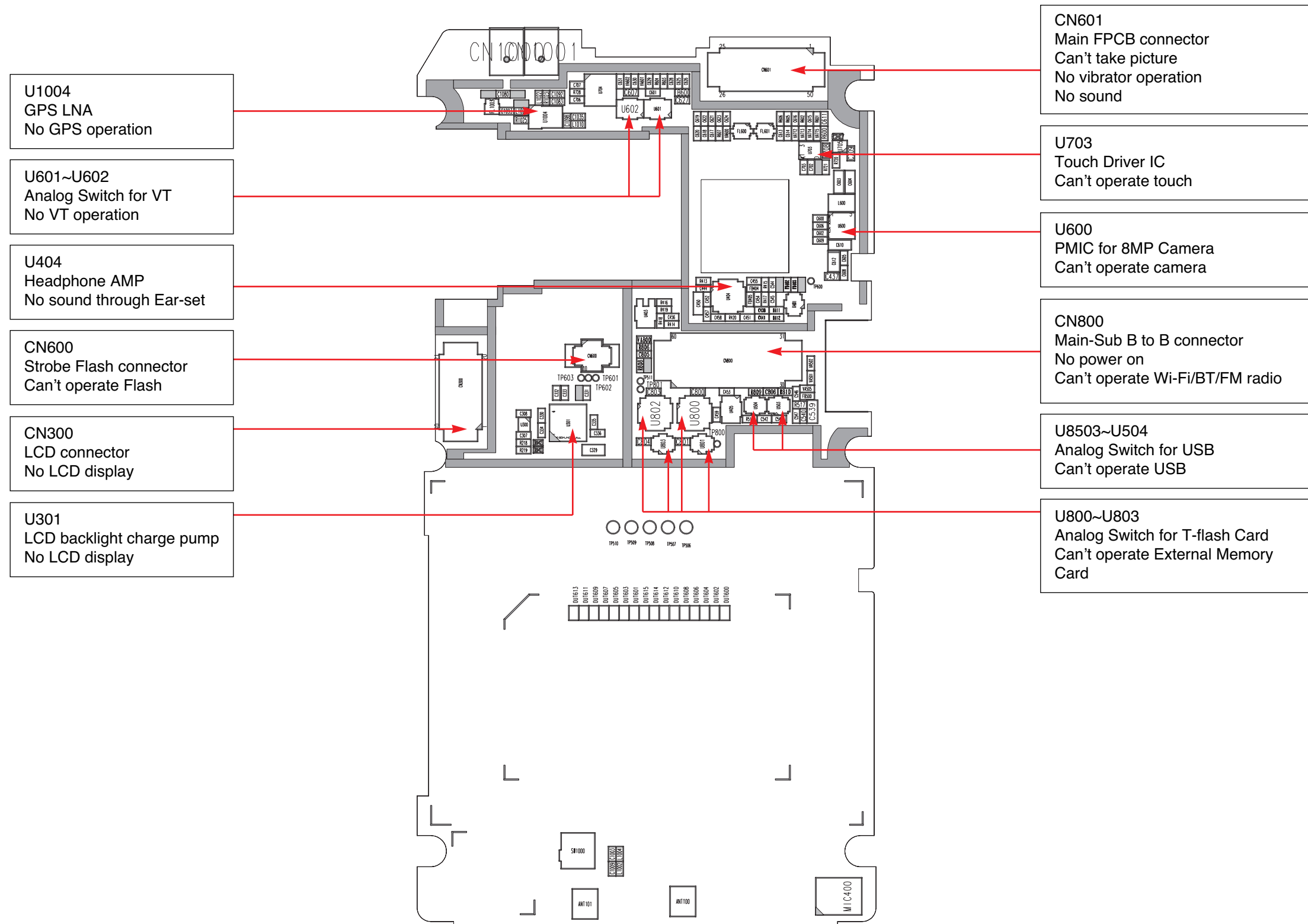
- **Used**  
 ● **Not used**

## 9. PCB LAYOUT



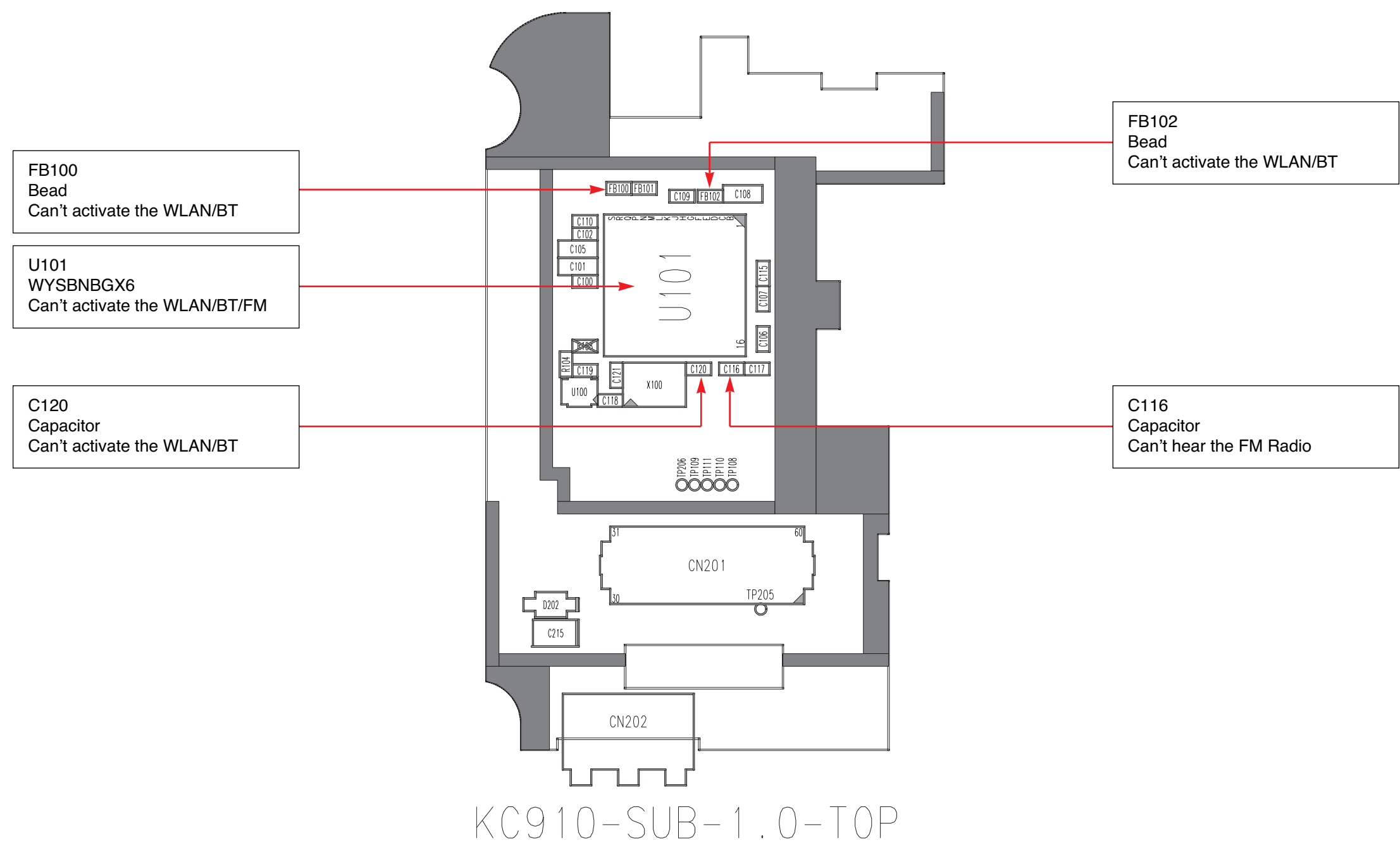
KC910 MAIN SPFY0182901-1.0-TOP

## 9. PCB LAYOUT

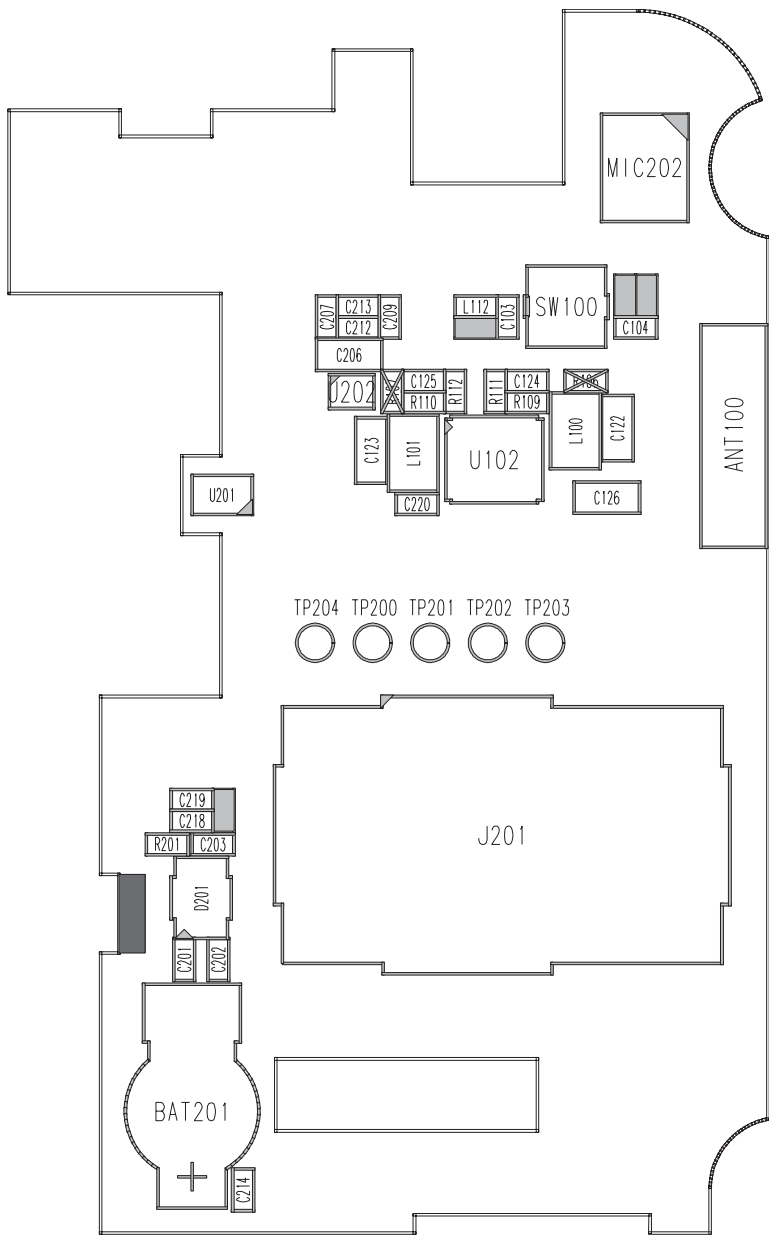


KC910 MAIN SPFY0182901-1.0-BOTTOM

9. PCB LAYOUT

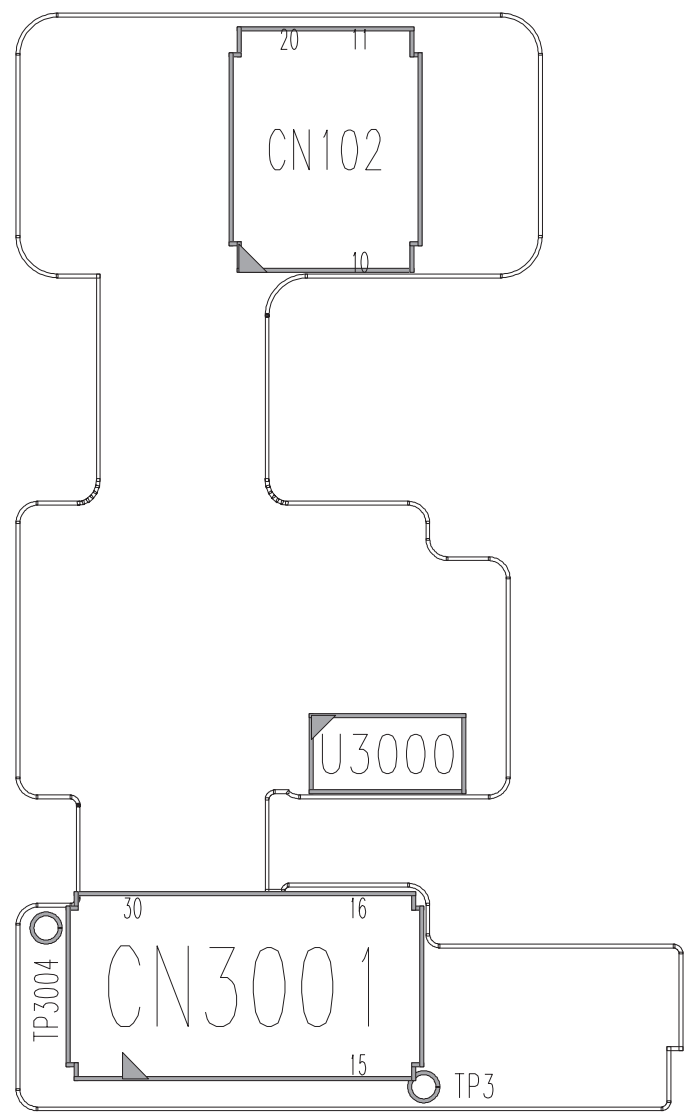


9. PCB LAYOUT



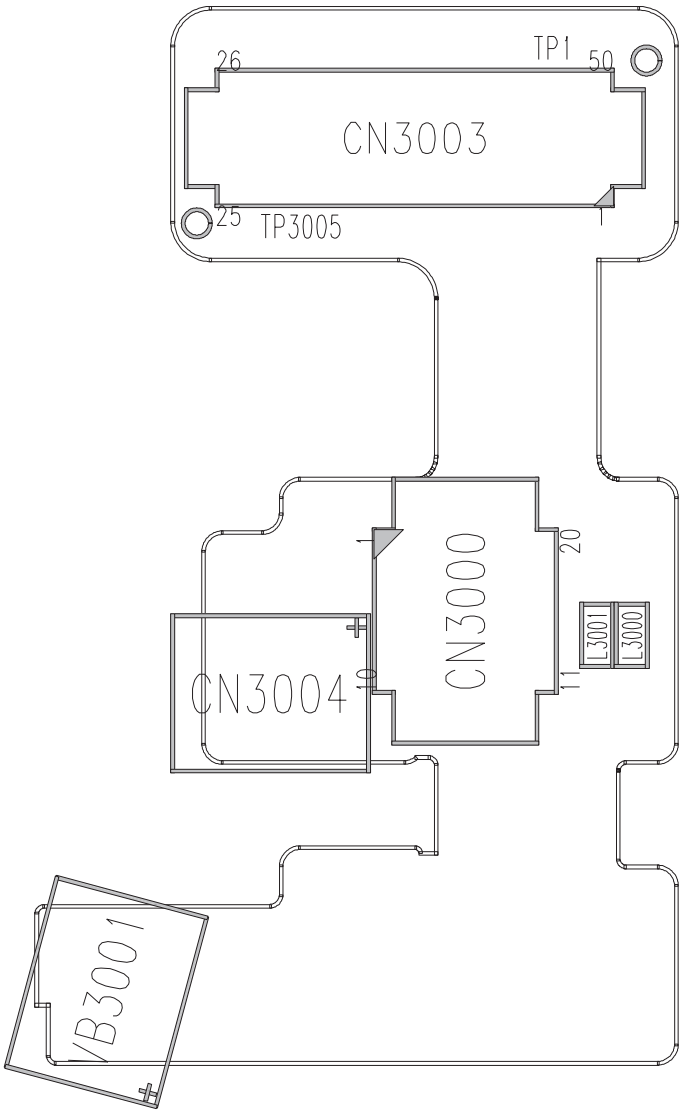
KC910-SUB-1.0-B0T

9. PCB LAYOUT



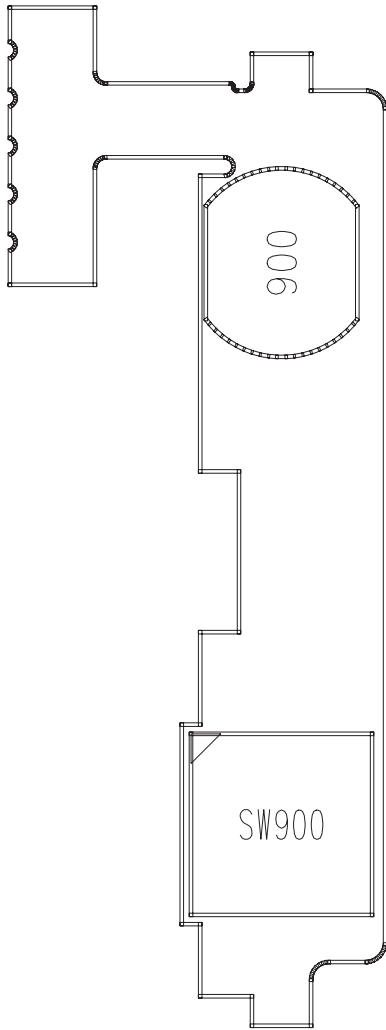
KC910-MAIN-FPCB-1.1-TOP

9. PCB LAYOUT



KC910-MAIN-FPCB-1.1-B0T

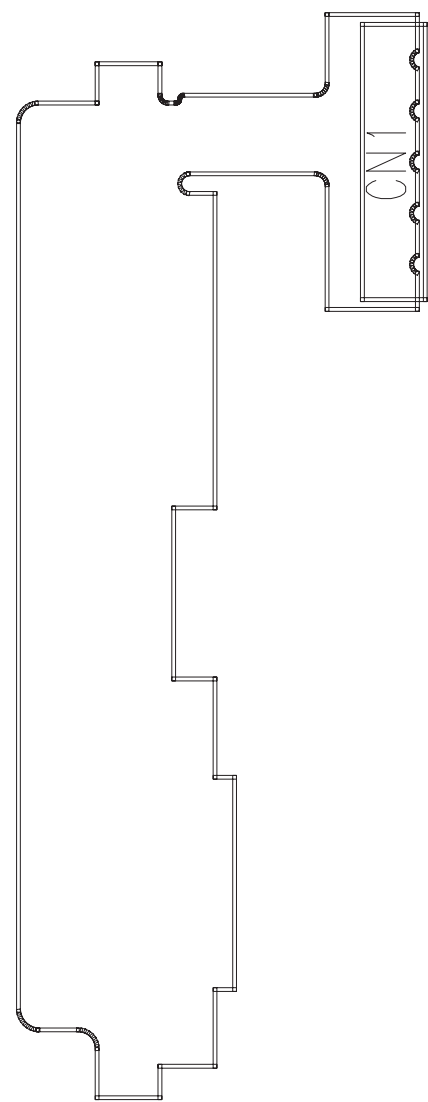
9. PCB LAYOUT



KC910-F\_SK-AF-1.0-TOP



9. PCB LAYOUT

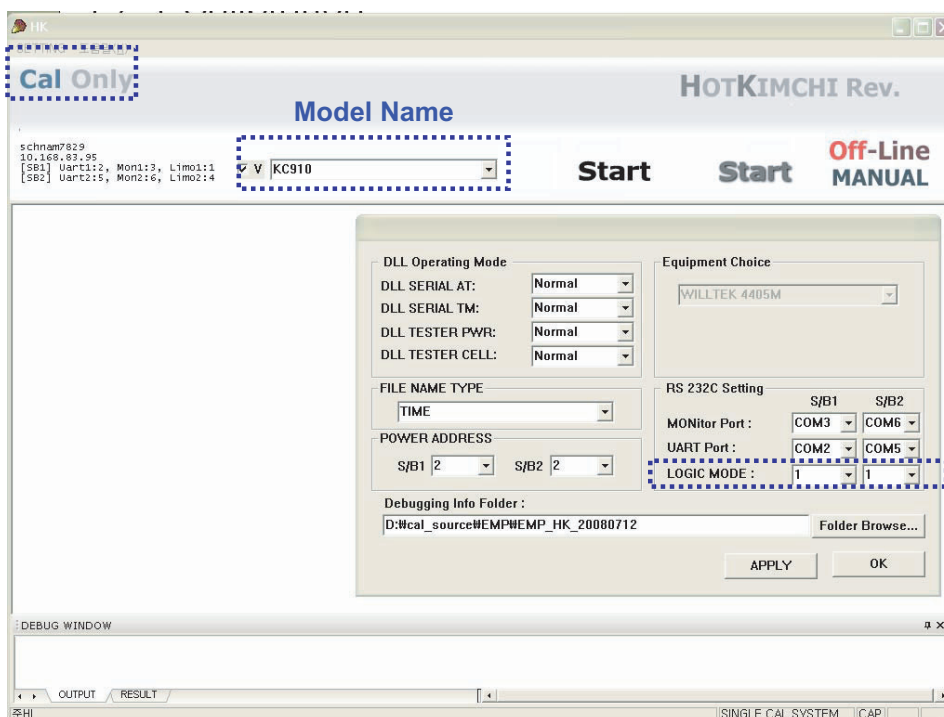


KC910-F\_SK-AF-1.0-B0T

## 10. Calibration

### 10.1 Usage of Hot-Kimchi

#### 10.1.1 Calibration



#### • Procedure

1. Click SETTING in menu, and logic operation in sub-menu.  
Choose "1" in LOGIC MODE (means calibration alone)
2. Select the model name which you want in list box
3. Click Start button to calibrate a phone

## 10. Calibration

### 10.1.2 Basic Setting

**DLL Operating Mode**

DLL SERIAL AT: Normal

DLL SERIAL TM: Normal

DLL TESTER PWR: Normal

DLL TESTER CELL: Normal

**Equipment Choice**

WILLTEK 4405M

**FILE NAME TYPE**

**POWER ADDRESS**

S/B1 2 S/B2 9

**RS 232C Setting**

	S/B1	S/B2
MONitor Port :	COM3	COM6
UART Port :	COM2	COM5
LOGIC MODE :	1	1

**Debugging Info Folder :**

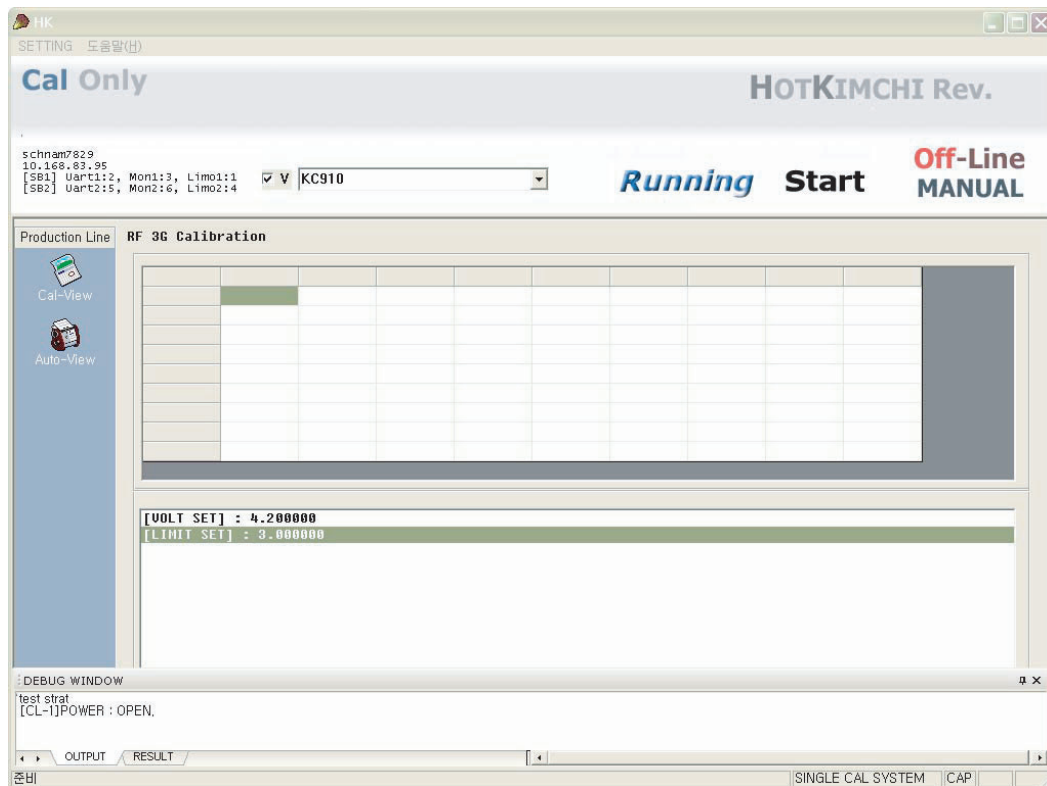
D:\Jhangee Folder Browse...

APPLY OK

#### • Contents

- ✓ Click SETTING in menu, and logic operation in sub-menu.
- ✓ You can select how to control AT comm, Testset, and Power supply in DLL Operating Mode.
- ✓ You can set UART Port and logic mode. (mode 1 : Calibration alone)
- ✓ You can set Result File's name type. If you choose "TIME", the saved files' name is saved in a run - time.
- ✓ You can run the multi mode (S/B1,S/B2 : You can use S/B1 for only one port.)
- ✓ You can set the path of HOTKIMCHI program.

### 10.1.3 Log of Calibration and Test



#### • Contents

- ✓ On Running, Log window is created in center area. It displays logs of command, and measurements of Calibration or Autotest.
- ✓ The result files are saved in the directory “~janghee\debug\Cal”, “~janghee\debug\Auto”, or “~janghee\debug\CalAuto”.

## 11. Test Mode

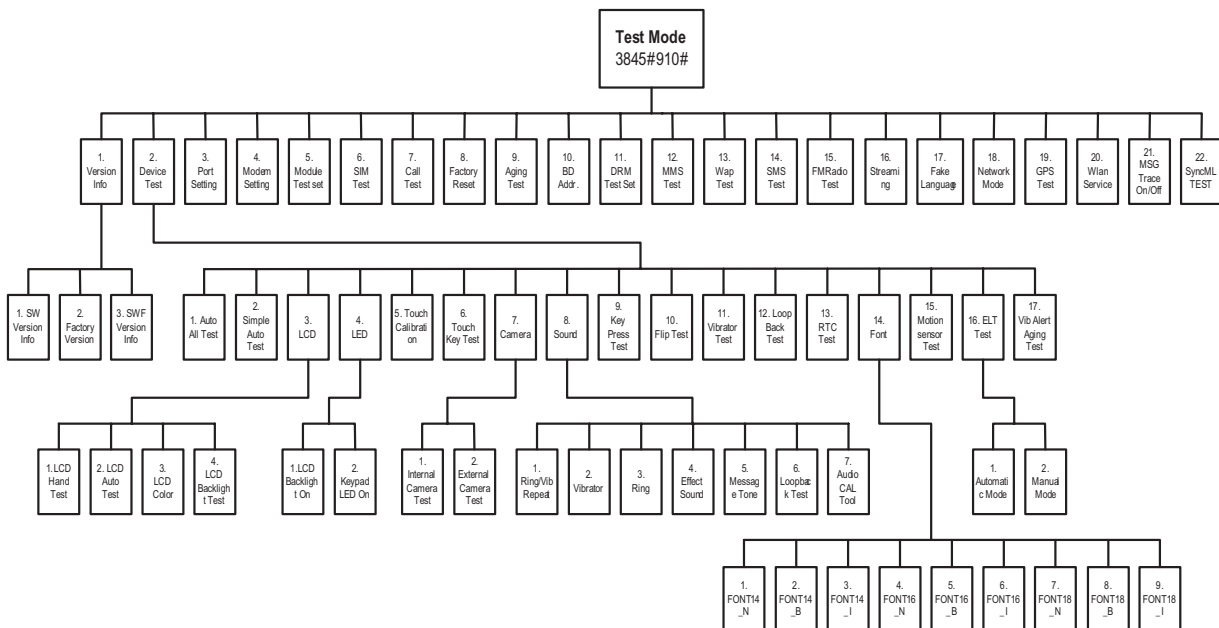
## 11. Test Mode

### A. About Test Mode

Test mode is designed to allow a service man/engineer to view and test the basic functions provided dset.

### B. Access Codes

The key sequence for switching the test mode on is 3845#\*910# Pressing END will switch back to non-test mode operation.



### 1. Version Info

#### 1.1 SW Version Info.

- 1.1.1 SW Version
- 1.1.2 Media Version
- 1.1.3 Module Version
- 1.1.4 HW Version
- 1.1.5 DSP Version

#### 1.2 Factory Version

### 2. Device Test

#### 2.1 Auto All Test

Key Press Test (send, menu, end, volume, AF, shutter, lock) → Sound Test → Vibrator Test → External Memory Test → 8M Camera Test (When ready, press send button) → VGA Camera Test → 8M Video CAM Recoding Test → VGA Video Cam Recording Test → Image Show → Video Play → Loopback Test → Motion Sensor → ALC Test

#### 2.2 Simple Auto Test

Sound Test → Vibrator Test → 8M Camera Test → VGA Camera Test → ALC Test

#### 2.3 LCD

##### 2.3.1 LCD Hand Test

It displays red screen.

##### 2.3.2 LCD AutoTest

It displays 5 colors (Red → Green → Blue → Black → White) in sequence.

##### 2.3.3 LCD Color

##### 2.3.4 LCD Backlight Test

Brightness of the LCD Backlight is changed according to current dimming level (min : 0 ~ max : 15). Level can be changed by using volume key.

#### 2.4 LED Test

This menu is LCD Backlight ON/ OFF and Keypad LED ON/ OFF.

##### 2.4.1 LCD Backlight ON

It toggles LCD Backlight ON and OFF.

##### 2.4.2 Keypad LED ON

It toggles Keypad LED ON and OFF.

#### 2.5 Touch Calibration

To calibrate touch screen

#### 2.6 Touch Key Test

This menu is to test touch key. Screen is divided by 32. If touch a divided cell, its color is changed green. Finally press menu button, number of touch press is showed at each divided cell.

#### 2.7 Camera

##### 2.7.1 Internal Camera Test

This menu is to test a VGA Camera.

##### 2.7.2 External Camera Test

This menu is to test a 8M Camera

#### 2.8 Sound

##### 2.8.1 Ring/ Vib Repeat

This menu is to test a ring sound and vibration.

Ring sound is played and the vibration is followed. And repeat.

##### 2.8.2 Vibrator

This menu is to test vibration. To start a test, press start button, and press a stop button to stop.

##### 2.8.3 Ring

Ring sound is played.

##### 2.8.4 Effect Sound

Alarm sound is played.

##### 2.8.5 Message Tone.

Message tone sound is played.

##### 2.8.6 Loopback Test

It can hear a sound inputted through main mic like an echo.

## 11. Test Mode

---

### 2.8.7 Audio cal tool

This menu is to tune an audio performance.

### 2.9 Key Press Test

Key press test. Pressed key is displayed.  
To escape, touch an OK button.

### 2.10 Vibrator Test

It's a vibration test.

### 2.11 Loopback Test

It's a loopback test. Refer to 2.7.6.

### 2.12 RTC Test

Real time test. Time clock is showed.

### 2.13 Font

#### 2.13.1 FONT14\_N

font size is 14.

#### 2.13.2 FONT14\_B

Size 14, Bold

#### 2.13.3 FONT14\_I

Size 14, Italic

#### 2.13.4 FONT16\_N

font size is 16.

#### 2.13.5 FONT16\_B

Size 16, Bold

#### 2.13.6 FONT16\_I

Size 16, Italic

### 2.14 Motion Sensor Test

(X, Y, Z) coordinate is showed as motion detected. And swivel is showed as north, south, east, and west

### 2.15 ELT Test

### 2.16 Vib Alert Aging Test

Vibration and Alert sound play for aging test

## 3. Port Setting

This menu is to set port

## 4. Modem Setting

This menu is to set modem.

## 5. Module Test set

This menu is to set Module.

## 6. SIM Test

This menu can set virtual SIM

## 7. Call Test

This Menu is to test call, VT call.

## 8. Factory Reset.

This menu is to restore factory setting value

## 9. Aging Test

This menu is to test aging test

## 10. BD Addr.

It shows BD Addr.

## 11. DRM Test Set

IT's DRM Test mode

## 12. MMS Test

## 13. WAP test

## 14. SMS Test

This menu is to test sending or receiving SMS message.

## 15. FM Radio Test

This menu is to test RSSI of each FM radio frequencies.

### **16. Streaming**

This menu is to set streaming

### **17. Fake Language**

### **18. Network Mode**

This menu is to select network band manually.

### **19. GPS Test**

This menu is to test GPS signal strength and number of satellite and fix location.

### **20. Wlan Service**

This menu is to test WLAN. Search a access points.

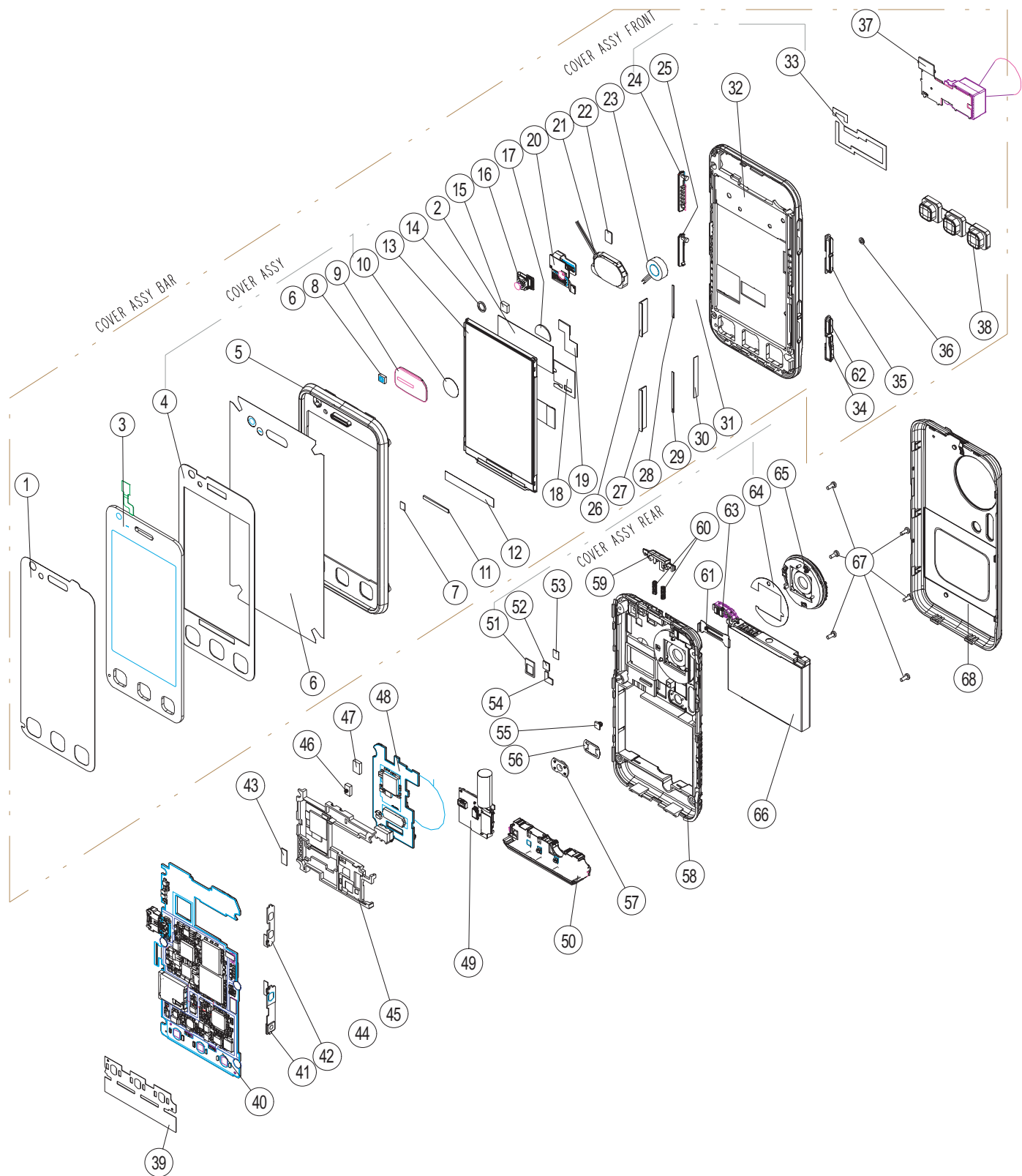
### **21. MSG Trace on/ off**





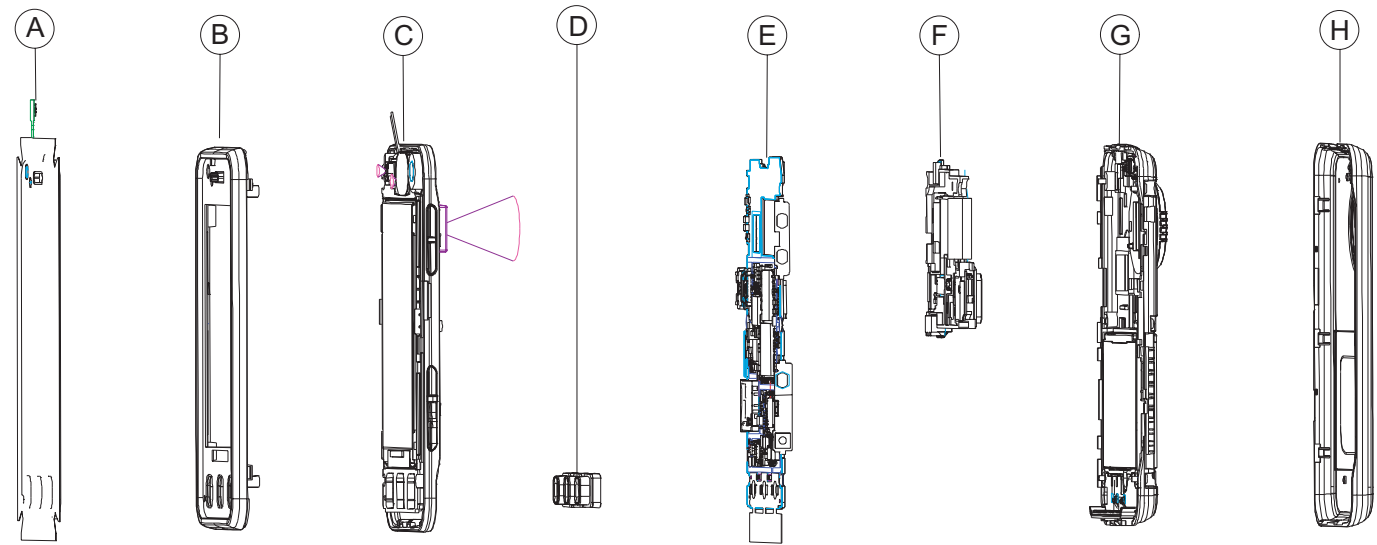
# 12. EXPLODED VIEW & REPLACEMENT PART LIST

## 12.1 EXPLODED VIEW



68	COVER, BATTERY	I	MCJA007030I	
67	SCREW MACHINE BIND	I	GMEY000920I	
66	BATTERY	I	SBPL0009110I	
65	COVER, CAMERA(LENS COVER)	I	MCJQ000260I	
64	TAPE, CAMERA(LENS COVER)	I	MTAK001560I	
63	ANTENNA ASSY, GPS	I	SNGF004110I	
62	BUTTON, SIDE(LOCK)	I	MBJL007000I	
61	HOLDER(CARD)	I	MHGZ003060I	
60	SPRING, LOCKER	2	MSDZ000230I	
59	LOCKER, BATTERY	I	MLEA004710I	
58	COVER, REAR	I	MCJN008950I	
57	LENS, FLASH(AF)	I	MLCE001040I	
56	TAPE, WINDOW(AF)	I	MTAD009520I	
55	PAD, CONN(STROBE)	I	MPBU003740I	
54	PAD(SUPPORT)	I	MPBZ021310I	
53	FILTER, MIC(MOVING)	I	MFBZ003270I	
52	PAD, CONN(TOUCH WINDOW)	I	MPBU003730I	
51	PAD, MIC(MOVING)	I	MPBH004030I	
50	ANTENNA ASSY, ANTENNA	I	SNGF003860I	
49	STROBE	I	SMZY0016804	
48	PCB ASSY, SUB	I	SAJY003570I	
47	PAD(CONN FRAME)	I	MPBZ021290I	
46	PAD(CONN FRAME)2	I	MPBZ021620I	
45	FRAME SHIELD	I	MFEA002260I	
44	TAPE(MAIN PCB)	I	MTAZ022340I	
43	PAD, MMI	I	MPBZ021950I	
42	PCB, SIDEKEY (Volume)	I	SPKY006260I	
41	PCB, SIDEKEY (Camera)	I	SPKY006280I	
40	PCB ASSY, MAIN	I	SAFB008780I	
39	DOVE ASSY, METAL	I	ADCA008570I	
38	KEYPAD, MAIN	I	MKAG001100I	
37	CAMERA ASSY	I	SVCY001900I	
36	PAD, MIC	I	MPBH004020I	
35	BUTTON, SIDE(VOLUME)	I	MBJL006560I	
34	BUTTON, SIDE(CAMERA)	I	MBJL006550I	
33	TAPE, CAMERA	I	MTAZ021850I	
32	COVER, FRONT	I	MCJK009220I	
31	TAPE, BUTTON (SUS CAMERA)2	I	MTAG000950I	
30	TAPE, BUTTON (SUS VOL)2	I	MTAG000940I	
29	TAPE, BUTTON (SUS VOL)	I	MTAG000840I	
28	TAPE, BUTTON (SUS CAMERA)	I	MTAG000850I	
27	GUIDE, BUTTON (CAMERA)	I	MGDC000120I	
26	GUIDE, BUTTON (VOLUME)	I	MGDC000130I	
25	CAP, MULTIMEDIA CARD	I	MCCG001540I	
24	CAP, EARPHONE JACK	I	MCCC005840I	
23	MOTOR	I	SJMY0008507	
22	PAD, CONNECTOR	I	MPBU003720I	
21	SPEAKER	I	SUSY002760I	
20	PCB ASSY, FLEXIBLE	I	SACY007900I	
19	TAPE, SHIELD(MOTOR)	I	MTAC007640I	
18	PLATE	I	MPFZ003440I	
17	PAD, MOTOR	I	MPBJ005710I	
16	CAMERA(VGA)	I	SVCY001750I	
15	PAD, CONNECTOR (OPTICAL)	I	MPBU004280I	
14	PAD, CAMERA(VGA)	I	MPBT006280I	
13	LCD	I	SVLM002550I	
12	TAPE, SHIELD (LCD)	I	MTAC007430I	
11	PAD, LCD(IC)	I	MPBG008200I	
10	TAPE, MOTOR	I	MTAF002070I	
9	PAD, SPEAKER	I	MPBN006010I	
8	PAD(OPTICAL SENSOR)	I	MPBZ021610I	
7	FILTER, MIC	I	MFBZ003260I	
6	TAPE, PROTECTION(COVER1)	I	MTAB025380I	
5	COVER	I	MCJZ005330I	
4	TAPE, WINDOW	I	MTAD009180I	
3	WINDOW LCD	I	MWAC010570I	
2	TAPE, SHIELD (LCD, TOP)	I	MTAC007630I	
1	TAPE, PROTECTION(WINDOW)	I	MTAB025330I	
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK

ASS'Y EXPLODED VIEW



H	COVER BATTERY	MCJA007030I	
G	COVER ASSY REAR	ACGM011780I	
F	FRAME ASSY SHEILD	AFBA001060I	
E	PCB ASSY MAIN	SAFY027510I	
D	KEYPAD MAIN	MKAG001100I	
C	COVER0 ASSY FRONT	ACGK011930I	
B	COVER ASSY	ACGZ001610I	
A	WINDOW LCD	MWAC010570I	
NO.	DESCRIPTION	DRAWING NO.	REMARK

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

### 12.2 Replacement Parts <Mechanic component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		IMT,BAR/FLIP	TIMT0002701		Silver	
2	AAAY00	ADDITION	AAAY0339703		Without Color	
3	MBAC00	BAG,LEATHER	MBAC0003401	COMPLEX, (empty), , , ,	Black	
3	MCJA00	COVER,BATTERY	MCJA0072801	COMPLEX, (empty), , , ,	Black	H, 68
4	MPFF00	PLATE,LOGO	MPFF0009201	COMPLEX, (empty), , , ,	Without Color	
4	MSDD00	SPRING,PLATE	MSDD0007701	PRESS, STS, , , ,	Without Color	
4	MTAB00	TAPE,PROTECTION	MTAB0272501	COMPLEX, (empty), , , ,	Without Color	
3	MPHY	PROTECTOR	MPHY0014701	COMPLEX, (empty), , , ,	Without Color	
3	MCJZ00	COVER	MCJZ0054103	COMPLEX, (empty), , , ,	Black	
3	MLAC00	LABEL,BARCODE	MLAC0004541	PRINTING, (empty), , , ,	Without Color	
3	MLAJ00	LABEL,MASTER BOX	MLAJ0004401	LABEL,MASTER BOX(for C1300i NEW_CGR)	Without Color	
3	MPBA00	PAD,BOX	MPBA0007401	COMPLEX, (empty), , , ,	Without Color	
2	APEY	PHONE	APEY0711401		Silver	
3	ACGM	COVER ASSY,REAR	ACGM0117802		Without Color	G
4	MCJN00	COVER,REAR	MCJN0089502	MOLD, PC LUPOY SC-2302, , , ,	Silver	58
4	MCJQ00	COVER,CAMERA(REAR)	MCJQ0002602	COMPLEX, (empty), , , ,		65
4	MFBD00	FILTER,MIKE	MFBD0032701	COMPLEX, (empty), , , ,	Without Color	53
4	MHGZ00	HOLDER	MHGZ0030601	COMPLEX, (empty), , , ,	Without Color	61
4	MLAB00	LABEL,A/S	MLAB0004801	PRINTING, (empty), , , ,	Without Color	
4	MLCE00	LENS,FLASH	MLCE0010401	MOLD, PMMA IH830, , , ,	Without Color	57
4	MLEA00	LOCKER,BATTERY	MLEA0047102	MOLD, PC LUPOY SC-1004A, , , ,	Silver	59
4	MPBH01	PAD,MIKE	MPBH0040301	COMPLEX, (empty), , , ,	Without Color	51

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	MPBU00	PAD,CONNECTOR	MPBU0037401	MOLD, Silicone Rubber K-770, , , , ,	Without Color	55
4	MPBU01	PAD,CONNECTOR	MPBU0037301	COMPLEX, (empty), , , , ,	Without Color	52
4	MPBZ00	PAD	MPBZ0213101	COMPLEX, (empty), , , , ,	Without Color	54
4	MSDZ00	SPRING	MSDZ0002301	CUTTING, STS, , , , ,	Without Color	60
4	MTAD00	TAPE,WINDOW	MTAD0095201	COMPLEX, (empty), , , , ,	Without Color	56
4	MTAK00	TAPE,CAMERA	MTAK0015601	COMPLEX, (empty), , , , ,	Without Color	64
3	ACGV	COVER ASSY,BAR	ACGV0001402			
4	ACGK00	COVER ASSY,FRONT	ACGK0119302			C
5	MBJL00	BUTTON,SIDE	MBJL0070002		Silver	62
5	MBJL01	BUTTON,SIDE	MBJL0065502	COMPLEX, (empty), , , , ,	Silver	34
5	MBJL02	BUTTON,SIDE	MBJL0065602	COMPLEX, (empty), , , , ,	Silver	35
5	MCCC00	CAP,EARPHONE JACK	MCCC0058402	COMPLEX, (empty), , , , ,	Silver	24
5	MCCG00	CAP,MULTIMEDIA CARD	MCCG0015402	COMPLEX, (empty), , , , ,	Silver	25
5	MCJK00	COVER,FRONT	MCJK0092202	MOLD, PC LUPOY SC-2302, , , , ,	Silver	32
6	MICC	INSERT,FRONT(UPPER)	MICC0010101	M1.4 D2.2 L5.0	Gold	
6	MPFZ00	PLATE	MPFZ0032901	PRESS, STS, , , , ,	Without Color	
5	MGDC00	GUIDE,BUTTON	MGDC0001301	PRESS, STS, , , , ,	Without Color	26
5	MGDC01	GUIDE,BUTTON	MGDC0001201	PRESS, STS, , , , ,	Without Color	27
5	MPBH00	PAD,MIKE	MPBH0040201	COMPLEX, (empty), , , , ,	Black	36
5	MTAG00	TAPE,BUTTON	MTAG0008501	COMPLEX, (empty), , , , ,	Without Color	28
5	MTAG01	TAPE,BUTTON	MTAG0008401	COMPLEX, (empty), , , , ,	Without Color	29
5	MTAG02	TAPE,BUTTON	MTAG0009401	COMPLEX, (empty), , , , ,	Without Color	30
5	MTAG03	TAPE,BUTTON	MTAG0009501	COMPLEX, (empty), , , , ,	Without Color	31
5	MTAK00	TAPE,CAMERA	MTAK0015501	COMPLEX, (empty), , , , ,	Without Color	
4	ACGZ00	COVER ASSY	ACGZ0016102			B
5	MCJZ00	COVER	MCJZ0053302	MOLD, PC LUPOY SC-1004A, , , , ,	Silver	5

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	MICC	INSERT,FRONT(UPPER)	MICC0010101	M1.4 D2.2 L5.0	Gold	
5	MFBD00	FILTER,MIKE	MFBD0032601	COMPLEX, (empty), , , ,	Without Color	7
5	MPBN00	PAD,SPEAKER	MPBN0060101	COMPLEX, (empty), , , ,	Black	9
5	MPBZ00	PAD	MPBZ0216101	COMPLEX, (empty), , , ,	Without Color	8
5	MTAD00	TAPE,WINDOW	MTAD0091801	COMPLEX, (empty), , , ,	Black	4
5	MTAF00	TAPE,MOTOR	MTAF0020701	COMPLEX, (empty), , , ,	Without Color	10
4	MKAG00	KEYPAD,MAIN	MKAG0011002	COMPLEX, (empty), , , ,	Silver	D, 38
4	MLAZ00	LABEL	MLAZ0038303	PRINTING, (empty), , , ,	White	
4	MPBG00	PAD,LCD	MPBG0082001	COMPLEX, (empty), , , ,	Without Color	11
4	MPBJ00	PAD,MOTOR	MPBJ0057101	COMPLEX, (empty), , , ,	Without Color	17
4	MPBT00	PAD,CAMERA	MPBT0062801	COMPLEX, (empty), , , ,	Black	14
4	MPBU00	PAD,CONNECTOR	MPBU0037201	COMPLEX, (empty), , , ,	Without Color	22
4	MPBU01	PAD,CONNECTOR	MPBU0042801		Without Color	15
4	MPFZ00	PLATE	MPFZ0034401	COMPLEX, (empty), 0.3, , , ,	Without Color	18
4	MTAB00	TAPE,PROTECTION	MTAB0253301	COMPLEX, (empty), , , ,	Without Color	1
4	MTAB01	TAPE,PROTECTION	MTAB0253801	COMPLEX, (empty), , , ,	Without Color	6
4	MTAC00	TAPE,SHIELD	MTAC0074301	COMPLEX, (empty), , , ,	Without Color	12
4	MTAC01	TAPE,SHIELD	MTAC0076301	COMPLEX, (empty), , , ,	Without Color	2
4	MTAC02	TAPE,SHIELD	MTAC0076401	COMPLEX, (empty), , , ,	Without Color	19
4	MWAC	WINDOW,LCD	MWAC0105702	COMPLEX, (empty), , , ,		A, 3
3	GMEY00	SCREW MACHINE,BIND	GMEY0009201	1.4 mm,3.5 mm,MSWR3(BK) ,B ,+ ,HEAD D=2.7mm	Black	67
3	MCCF00	CAP,MOBILE SWITCH	MCCF0055101	COMPLEX, (empty), , , ,	Without Color	
3	MLAA00	LABEL,APPROVAL	MLAA0048701	PRINTING, (empty), , , ,	White	
5	ADCA00	DOME ASSY,METAL	ADCA0085701		Without Color	39
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
5	AFBA00	FRAME ASSY,SHIELD	AFBA0010601		Without Color	F

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	MFEA00	FRAME,SHIELD	MFEA0022601	MOLD, PC LUPOY SC-1004A, , , ,	Without Color	45
6	MPBZ00	PAD	MPBZ0219501	COMPLEX, (empty), , , ,	Without Color	43
5	MPBU	PAD,CONNECTOR	MPBU0049501	COMPLEX, (empty), , , ,	Without Color	
5	MPBZ00	PAD	MPBZ0212901	COMPLEX, (empty), , , ,	Without Color	47
5	MPBZ01	PAD	MPBZ0216201	COMPLEX, (empty), , , ,	Without Color	46

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	SNG	ANTENNA,GSM,FIXED	SNGF0038602	3.0 ,-2.0 dBd,Silver ,KC910, GSM 850,900, 1800, 1900, W2100, Pb-Free ;; ,MULTI ,-2.0 ,50ohm ,3.0		50
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0041101	3.0 ,-2.0 dBd, ,KC910 GPS Ant(Carrier type), Pb-Free ;; ,[empty] ,-2.0 ,50 ,3.0		63
4	SACY00	PCB ASSY,FLEXIBLE	SACY0079001			20
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0073101			
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0049401			
7	50pin	CONNECTOR,BOARD TO BOARD	ENBY0040401	50 PIN,0.4 mm,ETC , ,H=1.0, Plug		
7	L3000	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
7	L3001	INDUCTOR,CHIP	ELCH0004727	100 nH,J ,1005 ,R/TP ,		
7	VGA Camera	CONNECTOR,BOARD TO BOARD	ENBY0039601	20 PIN,0.4 mm,ETC , ,H=1.0, Socket		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0062001			
7	8M Camera	CONNECTOR,BOARD TO BOARD	ENBY0047701	30 ,0.4 mm,STRAIGHT , ,H=1.0, SOCKET ;; , ,0.40MM ,STRAIGHT ,FEMALE ,SMD ,R/TP , ,		
7	TOUCH	CONNECTOR,BOARD TO BOARD	ENBY0018601	10 PIN,,4 mm,STRAIGHT , ,H=0.9, SOCKET		
7	Sensor	IC	EUSY0343701	WSOF6 ,6 PIN,R/TP ,Luminance sensor ;; ,IC,A/D Converter		
6	SPCY	PCB,FLEXIBLE	SPCY0147801	POLYI ,0.32 mm,MULTI-4 ,;; ,,,,,,,, ,		
4	SJMY00	VIBRATOR,MOTOR	SJMY0008507	2.0 V,90 mA,10*3.6 ,25mm wire 2.0vrms 90mArms ;; ,3V ,,,,,, ,		23
4	SUSY00	SPEAKER	SUSY0027603	ASSY ,8 ohm,88 dB,2012 mm,module spk ;; ,,,,,, ,WIRE		21
4	SVCY00	CAMERA	SVCY0017501	CMOS ,VGA ,Micron(1/11"), 5x17(5)x2.6t, F PCB (I/O 1.8V,2.8V)		16
4	SVCY01	CAMERA	SVCY0019001	CMOS ,MEGA ,8M AF (1/2.5") 12.7x18x8.63t F-PBC Full module		37
4	SVLM00	LCD MODULE	SVLM0025501	MAIN ,240*400 ,45.08*75*2.2 ,262k ,TFT ,TM ,DAC IC(Sharp) ,		13
3	SAFY00	PCB ASSY,MAIN	SAFY0275101			E
4	SAFB	PCB ASSY,MAIN,INSERT	SAFB0087803			40
5	SACY00	PCB ASSY,FLEXIBLE	SACY0079101			
6	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0073201			



## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0062101			
8	ESCY	SWITCH,TACT	ESCY0005301	1 V,1 A,HORIZONTAL ,1 G, ; ,10C2P ,[empty] ,[empty] , [empty] , [empty]		
7	SPKY	PCB,SIDEKEY	SPKY0062801	POLYI , mm,DOUBLE , ; , , , , , , , , ,		41
5	SPKY00	PCB,SIDEKEY	SPKY0062601	POLYI , mm,DOUBLE , ; , , , , , , , , ,		42
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0189501			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0113501			
6	C1000	CAP,CHIP,MAKER	ECZH0000839	4.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1001	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1002	CAP,CHIP,MAKER	ECZH0000839	4.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1004	CAP,CERAMIC,CHIP	ECCH0000123	51 pF,50V,J,NP0,TC,1005,R/TP		
6	C1005	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C1006	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1007	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1008	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C1011	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C1012	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1013	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1014	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1015	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C1016	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1017	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1018	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1019	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1020	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1021	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1022	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1023	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1024	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1025	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1026	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C1027	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1028	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1029	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C1030	CAP,CHIP,MAKER	ECZH0001002	0.5 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C1031	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , , [empty] ,[empty] , [empty] , [empty] , [empty] , [empty]		
6	C1032	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1033	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1034	CAP,CERAMIC,CHIP	ECCH0000175	2.7 pF,50V ,B ,NP0 ,TC ,1005 ,R/TP		
6	C1036	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C1037	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C1038	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1039	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1040	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C1041	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1042	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , , [empty] ,[empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C1043	CAP,CERAMIC,CHIP	ECCH0001001	6.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1044	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C1045	CAP,CHIP,MAKER	ECZH0000846	8.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1046	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1048	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C1049	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C1050	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1051	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1052	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1053	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1054	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1055	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1056	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1057	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1058	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1059	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C1060	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C1061	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C1062	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1063	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , [empty] [empty] [empty] [empty] [empty] [empty]		
6	C1064	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , [empty] [empty] [empty] [empty] [empty] [empty]		
6	C1065	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1067	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C1068	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1069	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1070	CAP,CERAMIC,CHIP	ECCH0000183	1.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1071	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1072	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C1073	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C1074	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1076	CAP,CERAMIC,CHIP	ECCH0000183	1.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1078	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1079	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1084	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1085	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1086	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1087	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1089	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1094	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1097	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C1099	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C1100	CAP,CERAMIC,CHIP	ECCH0000180	3.3 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1101	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1103	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C1104	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C1105	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C1106	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C1111	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C1114	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1115	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C1116	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1117	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C200	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C2002	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C201	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C202	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C206	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C207	CAP,TANTAL,CHIP	ECTH0002201	10 uF,6.3V ,M ,STD ,1608 ,R/TP		
6	C208	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C212	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C215	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C216	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C218	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C221	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C222	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C225	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C227	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C228	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C229	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C230	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C231	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C232	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C233	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C300	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L ,ESR ,1608 ,R/TP		
6	C301	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C302	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C303	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C304	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C305	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C309	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C310	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C312	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C313	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L ,ESR ,1608 ,R/TP		
6	C314	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C315	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C316	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C317	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C318	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C319	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C320	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C321	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C322	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C323	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C324	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C325	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C326	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C327	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C328	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C337	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C338	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C339	CAP,CERAMIC,CHIP	ECCH0000137	330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP		
6	C340	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C341	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C342	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C343	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C400	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C401	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C402	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C408	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0000199	12 nF,16V ,K ,X7R ,HD ,1005 ,R/TP		
6	C410	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C411	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C412	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C414	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C415	CAP,CHIP,MAKER	ECZH0001108	6800 pF,25V ,K ,X7R ,HD ,1005 ,R/TP		
6	C416	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C419	CAP,CHIP,MAKER	ECZH0001108	6800 pF,25V ,K ,X7R ,HD ,1005 ,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0000199	12 nF,16V ,K ,X7R ,HD ,1005 ,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C426	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C427	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C428	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C429	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C430	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C431	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C432	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C433	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C434	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C435	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C436	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C442	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C443	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C445	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C446	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C448	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C449	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C460	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C461	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C500	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C501	CAP,CERAMIC,CHIP	ECCH0006501	10000000 pF,6.3V ,K ,X5R ,TC ,2012 ,R/TP , , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C502	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C503	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C504	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C505	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C506	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C507	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C508	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C509	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C510	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C511	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C512	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C513	CAP,TANTAL,CHIP	ECTH0005203	33 uF,10V ,M ,STD ,2012 ,R/TP , , , [empty] , [empty] , [empty] , , [empty] , [empty] , [empty] , [empty]		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C514	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C515	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C516	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C517	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C518	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C519	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C520	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C521	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C522	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C523	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C524	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C525	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C526	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C527	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C528	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C529	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C530	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C531	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C532	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C533	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C534	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C535	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C536	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C537	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C538	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C543	CAP,CERAMIC,CHIP	ECCH0000391	1000000 pF,50V ,Z ,Y5V ,HD ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C700	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C704	CAP,CERAMIC,CHIP	ECCH0000147	2.2 nF,50V,K,X7R,HD,1005,R/TP		
6	C705	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C802	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	CN501	CONNECTOR,I/O	ENRY0006501	18 PIN,0.4 mm,ETC , , 1.2 Offset		



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## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	L1008	INDUCTOR,CHIP	ELCH0004710	15 nH,J ,1005 ,R/TP ,		
6	L1009	INDUCTOR,CHIP	ELCH0001032	18 nH,J ,1005 ,R/TP ,PBFREE		
6	L1011	INDUCTOR,CHIP	ELCH0004701	12 nH,J ,1005 ,R/TP ,		
6	L1012	INDUCTOR,CHIP	ELCH0004708	2.7 nH,S ,1005 ,R/TP ,		
6	L1013	INDUCTOR,CHIP	ELCH0012508	2 nH,S ,1005 ,R/TP ,Film chip, tolerance0.1nH		
6	L1014	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	L1015	INDUCTOR,CHIP	ELCH0004701	12 nH,J ,1005 ,R/TP ,		
6	L1016	INDUCTOR,CHIP	ELCH0003820	3 nH,S ,1005 ,R/TP ,PBFREE		
6	L1017	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	L1018	INDUCTOR,CHIP	ELCH0005013	4.7 nH,S ,1005 ,R/TP ,		
6	L1019	INDUCTOR,CHIP	ELCH0004709	3.3 nH,S ,1005 ,R/TP ,		
6	L1021	INDUCTOR,CHIP	ELCH0003818	9.1 nH,J ,1005 ,R/TP ,		
6	L1024	INDUCTOR,CHIP	ELCH0001033	1.5 nH,S ,1005 ,R/TP ,PBFREE		
6	L1026	INDUCTOR,CHIP	ELCH0004703	1 nH,S ,1005 ,R/TP ,		
6	L1027	INDUCTOR,CHIP	ELCH0004708	2.7 nH,S ,1005 ,R/TP ,		
6	L1028	INDUCTOR,CHIP	ELCH0003820	3 nH,S ,1005 ,R/TP ,PBFREE		
6	L1029	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	L1030	INDUCTOR,CHIP	ELCH0004713	6.8 nH,J ,1005 ,R/TP ,		
6	L1031	INDUCTOR,CHIP	ELCH0004709	3.3 nH,S ,1005 ,R/TP ,		
6	L1033	INDUCTOR,CHIP	ELCH0005020	1 nH,S ,1005 ,R/TP ,		
6	L200	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L300	INDUCTOR,CHIP	ELCH0010401	2.2 uH,M ,1005 ,R/TP ,		
6	L301	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP , , , , ,0.3NH , , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L500	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	L501	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP , , , , ,0.3NH , , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L502	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP , , , , ,0.3NH , , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L503	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP , , , , ,0.3NH , , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L504	INDUCTOR,CHIP	ELCH0010401	2.2 uH,M ,1005 ,R/TP ,		
6	LD700	DIODE,LED,CHIP	EDLH0011901	WHITE ,1608 ,R/TP ,PB-FREE(ZENER)		
6	LD701	DIODE,LED,CHIP	EDLH0007901	RED ,1608 ,R/TP ,Indicator,0.4T Red LED		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	LD702	DIODE,LED,CHIP	EDLH0007901	RED ,1608 ,R/TP ,Indicator,0.4T Red LED		
6	LD703	DIODE,LED,CHIP	EDLH0014501	GREEN ,1608 ,R/TP , , , [empty] ,2.85~3.25 , , , , [empty] , [empty] ,2P		
6	LD704	DIODE,LED,CHIP	EDLH0014501	GREEN ,1608 ,R/TP , , , [empty] ,2.85~3.25 , , , , [empty] , [empty] ,2P		
6	LD705	DIODE,LED,CHIP	EDLH0011901	WHITE ,1608 ,R/TP ,PB-FREE(ZENER)		
6	Q500	TR,FET,P-CHANNEL	EQFP0009401	SC75-6 ,19 W,-20 V,-12 A,R/TP ,P-Channel FET , , ,P-CHANNEL ,MOSFET ,-20 ,8 ,-12 ,0.041 ,19 ,SC75 ,R/TP ,6P		
6	Q501	TR,FET,N-CHANNEL	EQFN0008501	SC-89 ,0.236 W,30 V,1.3 A,R/TP ,N-Channel FET , , ,N-CHANNEL ,MOSFET ,30 ,20 ,1.3 ,0.129 ,1.3 ,SC89 ,R/TP ,6P		
6	R1000	RES,CHIP,MAKER	ERHZ0000456	2.2 ohm,1/16W ,J ,1005 ,R/TP		
6	R1001	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R1002	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
6	R1003	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
6	R1004	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
6	R1005	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R1006	RES,CHIP	ERHY0003201	1000 ohm,1/16W ,F ,1005 ,R/TP		
6	R1007	RES,CHIP,MAKER	ERHZ0003801	5.1 ohm,1/16W ,J ,1005 ,R/TP		
6	R1008	RES,CHIP,MAKER	ERHZ0003801	5.1 ohm,1/16W ,J ,1005 ,R/TP		
6	R1009	RES,CHIP,MAKER	ERHZ0000212	12 Kohm,1/16W ,F ,1005 ,R/TP		
6	R1010	RES,CHIP,MAKER	ERHZ0000457	30 ohm,1/16W ,J ,1005 ,R/TP		
6	R1011	RES,CHIP,MAKER	ERHZ0000327	180 ohm,1/16W ,F ,1005 ,R/TP		
6	R1012	RES,CHIP,MAKER	ERHZ0000327	180 ohm,1/16W ,F ,1005 ,R/TP		
6	R1013	RES,CHIP,MAKER	ERHZ0000500	62 ohm,1/16W ,J ,1005 ,R/TP		
6	R1014	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R1015	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R1016	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R1017	RES,CHIP,MAKER	ERHZ0000236	2000 ohm,1/16W ,F ,1005 ,R/TP		
6	R1018	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R1019	RES,CHIP,MAKER	ERHZ0000412	1200 ohm,1/16W ,J ,1005 ,R/TP		
6	R1020	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R1021	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R1022	PCB ASSY,MAIN,PAD OPEN	SAFO0000401	0OHM DNI		
6	R1024	RES,CHIP,MAKER	ERHZ0000495	56 ohm,1/16W ,J ,1005 ,R/TP		
6	R1026	RES,CHIP,MAKER	ERHZ0000408	110 ohm,1/16W ,J ,1005 ,R/TP		
6	R1027	RES,CHIP,MAKER	ERHZ0000408	110 ohm,1/16W ,J ,1005 ,R/TP		
6	R1028	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
6	R1029	RES,CHIP,MAKER	ERHZ0000242	220 ohm,1/16W ,F ,1005 ,R/TP		
6	R1030	RES,CHIP,MAKER	ERHZ0000242	220 ohm,1/16W ,F ,1005 ,R/TP		
6	R1031	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R1032	RES,CHIP,MAKER	ERHZ0000242	220 ohm,1/16W ,F ,1005 ,R/TP		
6	R1033	RES,CHIP,MAKER	ERHZ0000242	220 ohm,1/16W ,F ,1005 ,R/TP		
6	R1034	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R200	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R204	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R207	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000236	2000 ohm,1/16W ,F ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R212	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R213	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R300	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R301	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R303	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R304	RES,CHIP,MAKER	ERHZ0000490	51 ohm,1/16W ,J ,1005 ,R/TP		
6	R305	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R306	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R307	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R308	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R313	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R314	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R315	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R316	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R317	RES,CHIP,MAKER	ERHZ0000463	33 ohm,1/16W ,J ,1005 ,R/TP		
6	R319	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
6	R320	RES,CHIP	ERHY0000170	390 ohm,1/16W ,F ,1005 ,R/TP		
6	R321	RES,CHIP,MAKER	ERHZ0000267	3300 ohm,1/16W ,F ,1005 ,R/TP		
6	R322	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R323	RES,CHIP	ERHY0000283	130K ohm,1/16W,J,1005,R/TP		
6	R324	RES,CHIP	ERHY0000161	200K ohm,1/16W,F,1005,R/TP		
6	R400	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R401	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R402	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R403	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R404	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R405	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		
6	R406	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R407	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		
6	R408	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R409	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R410	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R421	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R500	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R501	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R502	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R503	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R504	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R505	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R507	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R508	RES,CHIP	ERHY0000147	56K ohm,1/16W,F,1005,R/TP		
6	R509	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R510	RES,CHIP,MAKER	ERHZ0000439	200 Kohm,1/16W ,J ,1005 ,R/TP		
6	R511	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R512	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R513	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R514	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R515	RES,CHIP,MAKER	ERHZ0004201	121000 ohm,1/16W ,F ,1005 ,R/TP		
6	R516	RES,CHIP	ERHY0000105	51 ohm,1/16W,F,1005,R/TP		
6	R518	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R609	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R700	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R701	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R702	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R703	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R704	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R705	RES,CHIP,MAKER	ERHZ0000493	51 Kohm,1/16W ,J ,1005 ,R/TP		
6	R706	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R707	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R708	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R709	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R710	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R711	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R712	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		
6	R713	RES,CHIP,MAKER	ERHZ0000484	470 ohm,1/16W ,J ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R714	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R715	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R716	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R717	RES,CHIP,MAKER	ERHZ0000527	200 ohm,1/6W ,J ,1005 ,R/TP		
6	R718	RES,CHIP,MAKER	ERHZ0000527	200 ohm,1/6W ,J ,1005 ,R/TP		
6	R719	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R722	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R724	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R725	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R726	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R800	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R801	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R802	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R804	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R805	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	S800	CONN,SOCKET	ENSY0015801	8 PIN,ETC , , 1.1 mm,H=1.9, Detect Pin		
6	U1000	IC	EUSY0344001	QFN ,68 ,R/TP ,Quad GSM, Tri WCDMA RF Transceiver ; ,IC,Tx/Rx		
6	U1001	PAM	SMPY0017001	dBm, %, A, dBc, dB , AXI , ; , , , , , , , , [empty] ,P/TP ,		
6	U1002	IC	EUSY0277102	MLF , 17 PIN,R/TP ,DCDC FOR PAM,2.5X2.8, 600mA ; ,IC,Sub PMIC		
6	U1003	COUPLER,RF DIRECTIONAL	SCDY0003901	19.8 dB,0.28 dB,33 dB,1.0*0.5*0.4 ,SMD ,Pb-free_Coupler_DCN Tx ; , [empty] ,836.5MHz ,25MHz ,SMD ,R/TP		
6	U1005	PAM	SMPY0013401	28 dBm,45 % ,410 mA,-41 dBc,28.5 dB,4*4*1 ,SMD ,HSDPA, Dual PAM		
6	U1006	COUPLER,RF DIRECTIONAL	SCDY0003801	20.5 dB,0.25 dB,34 dB,1.0*0.5*0.4 ,SMD ,Pb-free_Coupler_USPCS Tx ; , [empty] ,1880MHz ,60MHz ,SMD ,R/TP		
6	U1007	IC	EUSY0306201	Micro pak ,8 PIN,R/TP ,D Flip Flip		
6	U200	IC	EUSY0295601	CSP ,409 PIN,R/TP ,WCDMA/GSM/GPRS/EDGE/HSDPA Base Band		
6	U302	IC	EUSY0368801	BGA ,180 ,R/TP ,8M Camera ; ,IC,Digital Signal Processors		
6	U303	IC	EUSY0154417	DFN ,6 ,R/TP ,4MHz,400mA,ADJ,Buck ; ,IC,DC,DC Converter		
6	U304	IC	EUSY0355501	PLP1010-4 ,4 PIN,R/TP ,1.8V 150mA Single LDO ; ,IC,LDO Voltage Regulator		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	U400	IC	EUSY0343501	CSP ,42 PIN,R/TP ,Audio CODEC with Class AB,D dual speaker driver, Dual DAC ,; ,IC,Audio Codec		
6	U402	IC	EUSY0333403	FBGA ,225 PIN,ETC ,2G(LB/128Mx16/2.7V) NAND+1G(8Mx4x32/MONO) SDRAM ,; ,IC,MCP		
6	U406	IC	EUSY0353801	PLP1010-4 ,4 PIN,R/TP ,1x1 LDO, 3.3V , 150mA ,; ,IC,LDO Voltage Regulator		
6	U500	IC	EUSY0350001	CSP ,97 PIN,R/TP ,PMIC, CMOSRF RTR6285 reference ,; ,IC,PMIC		
6	U501	IC	EUSY0333701	TLLGA ,8 PIN,R/TP ,OVP		
6	U502	FILTER,EMI/POWER	SFEY0015301	SMD ,Pb-free_Bais ,; ,Filter,LCR		
6	U700	IC	EUSY0140901	SSOP5-P-0.65 ,5 PIN,R/TP ,XOR GATE, Pb Free		
6	U701	IC	EUSY0140901	SSOP5-P-0.65 ,5 PIN,R/TP ,XOR GATE, Pb Free		
6	U702	IC	EUSY0349001	BGA ,8 PIN,R/TP ,Class AB SPK AMP ,; ,IC,Audio Amplifier		
6	VA200	VARISTOR	SEVY0003801	18 V , ,SMD ,		
6	VA300	VARISTOR	SEVY0004101	5.6 V , ,SMD ,360pF, 1005		
6	VA301	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	VA302	VARISTOR	SEVY0003801	18 V , ,SMD ,		
6	VA500	VARISTOR	SEVY0007301	5 V ,<0.5pF ,SMD ,		
6	VA503	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA504	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA506	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA507	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA508	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	VA509	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	VA700	VARISTOR	SEVY0004201	14 V , ,SMD ,120pF, 1005		
6	VA701	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA702	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA703	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA704	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA705	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA706	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA707	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA708	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA709	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		



## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	VA710	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA711	VARISTOR	SEVY0004201	14 V , ,SMD ,120pF, 1005		
6	X1000	VCTCXO	EXSK0007802	19.2 MHz,1.5 PPM,10 pF,SMD ,3.3*2.5*1.0 , , , ,2PPM ,2.8V , , , ,SMD ,P/TP		
6	X300	X-TAL	EXXY0023301	27 MHz,50 PPM,9 pF,50 ohm,SMD ,3.2*2.5*0.7 ,30ppm at -20'C ~ +70'C, Pb Free		
6	X500	X-TAL	EXXY0018701	32.768 KHz,20 PPM,12.5 pF,70 Kohm,SMD ,3.2*1.5*0.9 ,		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0112001			
6	C1003	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1009	CAP,CHIP,MAKER	ECZH0000802	1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1035	CAP,CERAMIC,CHIP	ECCH0000901	2.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1080	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1083	CAP,CHIP,MAKER	ECZH0004402	100000 pF,16V ,Z ,X7R ,TC ,1005 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty]		
6	C1092	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C1093	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1098	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C329	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] ,0.8 mm		
6	C330	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C331	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C332	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C333	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C334	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C335	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C336	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C437	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C438	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C441	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C444	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C450	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C451	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C452	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C453	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C454	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C455	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C456	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C457	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C458	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C459	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C539	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , [empty] ,[empty] , [empty] , [empty] , [empty] , [empty] , 0.8 mm		
6	C540	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C541	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C542	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C544	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C545	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C546	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C547	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C600	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C601	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C602	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C603	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C604	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C605	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C606	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C607	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C608	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C609	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C610	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C611	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C612	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C613	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C614	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C615	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C616	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C617	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C618	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C619	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C620	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C621	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C622	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C623	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C624	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C625	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C626	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C627	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C628	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C629	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C630	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C631	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C702	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C703	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C706	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C707	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C708	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C709	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C800	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C801	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C803	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C804	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C805	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C806	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	CN1000	CONTACT,ANTENNA	MCIA0019501	PRESS, BeCu, , , , ,	Without Color	
6	CN1001	CONTACT,ANTENNA	MCIA0019501	PRESS, BeCu, , , , ,	Without Color	

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	CN300	CONNECTOR,BOARD TO BOARD	ENBY0036001	40 PIN,0.4 mm,ETC , ,H=1.0, Socket		
6	CN600	CONNECTOR,BOARD TO BOARD	ENBY0033101	10 PIN,0.4 mm,ETC , ,H=1.5, P4S Header		
6	CN601	CONNECTOR,BOARD TO BOARD	ENBY0040501	50 PIN,0.4 mm,ETC , ,H=1.0, Socket		
6	CN800	CONNECTOR,BOARD TO BOARD	ENBY0031301	60 PIN,0.4 mm,ETC , ,H=3.0, Socket		
6	FB402	FILTER,BEAD,CHIP	SFBH0007103	75 ohm,1005 ,CHIP BEAD, 300mA		
6	FB403	FILTER,BEAD,CHIP	SFBH0007103	75 ohm,1005 ,CHIP BEAD, 300mA		
6	FB404	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB405	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB500	FILTER,BEAD,CHIP	SFBH0008103	1000 ohm,1005 ,chip bead, 200mA,DCR0.9ohm ,; , , ,SMD ,R/TP		
6	FB600	FILTER,BEAD,CHIP	SFBH0000903	600 ohm,1005 ,		
6	FL1003	FILTER,SAW	SFSY0033403	1575.42 MHz,1.4*1.1*0.4 ,SMD ,1574.42M~1576.42M, IL 1.2, 5pin, U-U, 50-50, GPS HIGH ATTEN. ,; ,1575.42 ,1.4*1.1*0.4 ,SMD ,R/TP		
6	FL600	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL601	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	L1002	INDUCTOR,CHIP	ELCH0001412	1.8 nH,S ,1005 ,R/TP ,PBFREE		
6	L1004	INDUCTOR,CHIP	ELCH0004705	8.2 nH,J ,1005 ,R/TP ,		
6	L1010	INDUCTOR,CHIP	ELCH0004703	1 nH,S ,1005 ,R/TP ,		
6	L1022	INDUCTOR,CHIP	ELCH0001035	4.7 nH,S ,1005 ,R/TP ,PBFREE		
6	L1023	INDUCTOR,CHIP	ELCH0001408	6.8 nH,J ,1005 ,R/TP ,Pb Free		
6	L600	INDUCTOR,SMD,POWER	ELCP0010001	2.2 uH,M ,2.5x2.0x1.0 ,R/TP ,chip MLCI ,; , ,20% , , , , ,NON SHIELD ,2.5X2X1MM ,[empty] ,R/TP		
6	MIC400	MICROPHONE	SUMY0010604	UNIT ,-38 dB,4.72*3.76 ,1.25T Bottom Silicon type ,; , , ,UNI ,1.5V , ,SMD		
6	R1023	RES,CHIP,MAKER	ERHZ0000348	12 ohm,1/16W ,F ,1005 ,R/TP		
6	R1025	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R311	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R312	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R411	RES,CHIP,MAKER	ERHZ0000410	12 ohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R412	RES,CHIP,MAKER	ERHZ0000410	12 ohm,1/16W ,J ,1005 ,R/TP		
6	R413	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	R414	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R415	RES,CHIP,MAKER	ERHZ0000504	68 ohm,1/16W ,J ,1005 ,R/TP		
6	R416	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R417	RES,CHIP,MAKER	ERHZ0000504	68 ohm,1/16W ,J ,1005 ,R/TP		
6	R418	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R419	RES,CHIP,MAKER	ERHZ0000530	5.1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R420	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	R517	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R519	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R600	RES,CHIP,MAKER	ERHZ0000499	5600 ohm,1/16W ,J ,1005 ,R/TP		
6	R601	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R602	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R603	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R604	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R605	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R606	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R607	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R720	RES,CHIP	ERHY0003601	2700 ohm,1/16W ,J ,1005 ,R/TP		
6	R721	RES,CHIP	ERHY0003601	2700 ohm,1/16W ,J ,1005 ,R/TP		
6	R727	PCB ASSY,MAIN,PAD SHORT	SAFP0000401			
6	R728	RES,CHIP,MAKER	ERHZ0000474	390 ohm,1/16W ,J ,1005 ,R/TP		
6	R806	RES,CHIP,MAKER	ERHZ0000318	80.6 Kohm,1/16W ,F ,1005 ,R/TP		
6	R808	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R809	RES,CHIP,MAKER	ERHZ0000288	470 Kohm,1/16W ,F ,1005 ,R/TP		
6	R810	RES,CHIP,MAKER	ERHZ0000537	680000 ohm,1/16W ,F ,1005 ,R/TP		
6	SPFY	PCB,MAIN	SPFY0182901	FR-4 ,0.8 mm,STAGGERED-10 ,KC910-RENOIR ; , , , , , , , , , ,		
6	SW1000	CONN,RF SWITCH	ENWY0005301	,SMD , dB,H=1.85 ; , 3.00MM ,STRAIGHT ,RF ADAPTER ,SMD ,R/TP ,AU , ,		
6	U1004	MODULE,ETC	SMZY0016501	LNA Module(GPS LNA+B/P Filter) ; , RF Module		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	U300	IC	EUSY0355701	PLP1010-4 ,4 PIN,R/TP ,150mA 2.8V Single LDO ,; ,IC,Voltage Regulator		
6	U301	IC	EUSY0230104	CSP ,36 PIN,R/TP ,SUB PMIC,ALC,2LDO_150mA,1.33X ,; ,IC,Sub PMIC		
6	U401	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U403	IC	EUSY0250501	SC70 ,5 PIN,R/TP ,Comparator, pin compatible to EUSY0077701		
6	U404	IC	EUSY0303901	QFN ,130mW Capless Stereo Headphone Driver ,16 PIN,R/TP ,Capless hp amp		
6	U405	IC	EUSY0077301	SC70-6 ,6 PIN,R/TP ,SPDT Analog switch		
6	U503	IC	EUSY0338301	uMLP ,10 PIN,R/TP ,High Speed USB Siwitch 2.0 3.7pF 6.5ohm 1.4X1.8		
6	U504	IC	EUSY0338301	uMLP ,10 PIN,R/TP ,High Speed USB Siwitch 2.0 3.7pF 6.5ohm 1.4X1.8		
6	U600	IC	EUSY0358901	2.6X2.6 ,24 PIN,R/TP ,MM PMIC ,; ,IC,Sub PMIC		
6	U601	IC	EUSY0077301	SC70-6 ,6 PIN,R/TP ,SPDT Analog switch		
6	U602	IC	EUSY0077301	SC70-6 ,6 PIN,R/TP ,SPDT Analog switch		
6	U703	IC	EUSY0337101	CSP ,12 PIN,R/TP ,Touchscreen Controller IC , ,IC,A/D Converter		
6	U704	IC	EUSY0345201	3*3 QFN ,10 PIN,R/TP ,3xis Accelerometer ,; ,IC,A/D Converter		
6	U705	IC	EUSY0355701	PLP1010-4 ,4 PIN,R/TP ,150mA 2.8V Single LDO ,; ,IC,Voltage Regulator		
6	U800	IC	EUSY0259201	QFN ,16 PIN,R/TP ,Quad Analog Switch, Pb Free		
6	U801	IC	EUSY0317101	WQFN ,10 PIN,R/TP ,1.8*1.4*0.75		
6	U802	IC	EUSY0259201	QFN ,16 PIN,R/TP ,Quad Analog Switch, Pb Free		
6	U803	IC	EUSY0317101	WQFN ,10 PIN,R/TP ,1.8*1.4*0.75		
6	VA501	VARISTOR	SEVY0007301	5 V,<0.5pF ,SMD ,		
6	VA502	VARISTOR	SEVY0007301	5 V,<0.5pF ,SMD ,		
6	VA505	VARISTOR	SEVY0001001	14 V ,SMD ,50pF, 1005		
6	VA600	VARISTOR	SEVY0003801	18 V ,SMD ,		
6	VA601	VARISTOR	SEVY0003801	18 V ,SMD ,		
6	VA602	VARISTOR	SEVY0003801	18 V ,SMD ,		
6	VA712	VARISTOR	SEVY0001001	14 V ,SMD ,50pF, 1005		
6	VA713	VARISTOR	SEVY0001001	14 V ,SMD ,50pF, 1005		
6	VA714	VARISTOR	SEVY0001001	14 V ,SMD ,50pF, 1005		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	VA715	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	VA800	VARISTOR	SEVY0003601	5.6 V , ,SMD ,100pF, 1005		
5	WSYY00	SOFTWARE	WSYY0947902	KC910-V10c-SEP-21-2008-ORG-GB_DZ+3		
3	SAJY	PCB ASSY,SUB	SAJY0035702			48
4	SAJB00	PCB ASSY,SUB,INSERT	SAJB0016501			
5	SMZY00	MODULE,ETC	SMZY0016804	cap : 12.5uF/320V , ; ,Strobe Lamp		49
4	SAJE00	PCB ASSY,SUB,SMT	SAJE0028701			
5	SAJC00	PCB ASSY,SUB,SMT BOTTOM	SAJC0027401			
6	C100	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C101	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C102	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C107	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C109	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C115	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C116	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C117	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C215	CAP,TANTAL,CHIP	ECTH0005203	33 uF,10V ,M ,STD ,2012 ,R/TP , ; , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty]		
6	CN201	CONNECTOR,BOARD TO BOARD	ENBY0047801	60 ,0.4 mm,STRAIGHT , ,H=2.5, Header , ; , ,0.40MM ,STRAIGHT ,MALE ,SMD ,R/TP , ,		
6	CN202	CONNECTOR,ETC	ENZY0016301	3 PIN,3.0 mm,ETC , ,H-2.0		
6	D202	DIODE,TVS	EDTY0008601	SOD-323 ,6 V,400 W,R/TP ,PB-FREE		
6	FB100	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB101	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	FB102	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	R104	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R108	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	U100	IC	EUSY0232812	SON1612-6 ,6 PIN,R/TP ,2.8V, 150mA LDO		
6	U101	MODULE,ETC	SMZY0019301	WLAN(11b/g)+Bluetooth+FM Module 8.7 x 8.7 x 1.3 (BCM4325) ,; ,Bluetooth		
6	X100	TCXO	EXST0001901	26 MHz,2.5 PPM,10 pF,SMD ,32*15*1.0 ,TL_WL1251 ,; ,2.5PPM ,2.8V , , , ,SMD ,R/TP		
5	SAJD00	PCB ASSY,SUB,SMT TOP	SAJD0029601			
6	ANT100	ANTENNA,GSM,FIXED	SNGF0036701	3.0 , -2.0 dBd,, ,internal, bluetooth chip ,; ,SINGLE , -2.0 ,50 ,3.0		
6	BAT201	BATTERY,CELL,LITHIUM	SBCL0001305	3 V,1 mAh,COIN ,SMT Temp.260 degree. PB-Free B/B		
6	C103	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C104	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C123	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C124	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C126	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C201	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C202	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0005604	10000000 pF,6.3V ,M ,X5R ,TC ,1608 ,R/TP , , ,[empty] ,[empty] ,[empty] ,[empty] ,[empty] ,0.8 mm		
6	C207	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C209	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C212	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C218	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C219	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		



## 12. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	D201	DIODE,TVS	EDTY0008607	SC70-6L ,6 V,200 W,R/TP ,PB-FREE		
6	J201	CONN,SOCKET	ENSY0015101	6 PIN,ETC , ,2.54 mm,H=2.7		
6	L100	INDUCTOR,SMD,POWER	ELCP0010001	2.2 uH,M ,2.5x2.0x1.0 ,R/TP ,chip MLCI , , ,20% , , , ,NON SHIELD ,2.5X2X1MM ,[empty] ,R/TP		
6	L101	INDUCTOR,SMD,POWER	ELCP0010001	2.2 uH,M ,2.5x2.0x1.0 ,R/TP ,chip MLCI , , ,20% , , , ,NON SHIELD ,2.5X2X1MM ,[empty] ,R/TP		
6	L112	INDUCTOR,CHIP	ELCH0003835	4.7 nH,S ,1005 ,R/TP ,MLCI		
6	MIC202	MICROPHONE	SUMY0010608	UNIT ,42 dB,3.76*2.95*1.1 ,MEMS mic , , , ,OMNI [empty] , [empty]		
6	R106	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R107	PCB ASSY,MAIN,PAD SHORT	SAFP0000501			
6	R109	RES,CHIP,MAKER	ERHZ0004201	121000 ohm,1/16W ,F ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000204	100 Kohm,1/16W ,F ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000279	39 Kohm,1/16W ,F ,1005 ,R/TP		
6	R112	RES,CHIP	ERHY0000161	200K ohm,1/16W,F,1005,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
6	SW100	CONN,RF SWITCH	ENWY0006801	,SMD , dB, , ,0.40MM ,STRAIGHT ,SOCKET ,SMD [empty] , [empty] , ,		
6	U102	IC	EUSY0154416	MLF ,12 PIN,R/TP ,Dual DCDC,800mA, adj , , ,IC,Sub PMIC		
6	U201	IC	EUSY0362601	SSON004 ,4 ,R/TP ,Hall IC , , ,IC,CMOS		
6	U202	IC	EUSY0278501	SON5-P-0.50 ,5 PIN,R/TP ,INVERTER GATE, Pb Free		
5	SPJY00	PCB,SUB	SPJY0057601	FR-4 ,0.7 mm,SBL-6 ,KC910 SUB , , , , , , , , , ,		

## 12. EXPLODED VIEW & REPLACEMENT PART LIST

### 12.3 Accessory

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
3	MHBY00	HANDSTRAP	MHBY0006701	COMPLEX, (empty), , , , ,	TITANIUM	
3	SBPL00	BATTERY PACK,LI-ION	SBPL0091101	3.7 V,1000 mAh,1 CELL,PRISMATIC ,KU990(NYX) BATT, Europe Label, Pb-Free ,; ,3.7 ,1000 ,0.2C ,PRISMATIC ,46x34x55 , ,BLACK ,Innerpack ,Europe(Reverse insert OK)	Black	66
3	SGDY00	DATA CABLE	SGDY0014401	; ,[empty] ,[empty] ,1.2M , ,BLACK ,4, 18Pin Plug USB Data cable ,N		
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0005581	; ,RMS 10mW(0.4V,RM3 ,16 OHM ,93dB,1KHZ,1mW ,65dB 10KHZ ,104dB 100KHZ ,[empty] ,BLACK ,18P MMI CONNECTOR , ,Earphone,Stereo		
3	SSAD00	ADAPTOR,AC-DC	SSAD0025003	100-240V ,5060 Hz,5.1 V,.7 A,CE ,England, 18pin plug, Nyx packing ,; , , , , ,WALL 2P ,I/O CONNECTOR ,		

## Note

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